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I.—*On the occasional Inversion of the Temperature Relations between the Hills and Plains of Northern India.*—By JOHN ELIOT, M. A., METEOROLOGICAL REPORTER TO THE GOVERNMENT OF INDIA.

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One of the more important features of the meteorology of the month of January 1889 in Northern India was the remarkable variations of the temperature relations between the hills and plains of Northern India and more especially of Upper India. Under normal conditions of decrease of temperature vertically the temperature at the Punjab hill stations should be 15° to 20° lower than at the adjacent plain stations. The relation is sometimes reversed in the cold weather and the night temperatures are found to be several degrees higher at the hill stations than in the Punjab plains. Such variations or inversions of the ordinary temperature relations are of occasional occurrence in all mountain and adjacent valley districts. They have been observed in previous years in Northern India, but were larger and more prominent in Northern India in January 1889 than has been the case for many years.* The present hence appears to be a favourable period for discussing the

* Similar large and prolonged inversions of temperature occurred in the years 1879, 1880, and 1881 in Upper India.

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facts and causes of these occasional inversions of temperature in Northern India.

Before commencing with the subject proper of the paper it is desirable to give a summary of what is known generally of these occasional inversions of the ordinary vertical temperature relations.

Ferrel states it is probable the diurnal temperature oscillations of the upper strata of the atmosphere in the open air away from the influence of contact with the Earth's surface are extremely small. The effect of the Earth's temperature on that of the air above is not so great as it is below, so that this causes the amplitudes in the oscillations of the air temperature near the Earth's surface, though less than those of the Earth's surface, to be greater than those of the air above. The effect of this, it is readily seen, is to cause the temperatures in winter and during the night to approximate more nearly to the temperatures above, and hence to diminish the rate of decrease of temperature with increase of altitude at these times. But during the summer and the warmest part of the day, the effect is the reverse; it causes the temperatures below to differ still more from the temperatures above, and hence to increase the rate of diminution of temperature with increase of altitude. In the diurnal oscillations the rate near the surface at night from the effect of nocturnal cooling is reversed for some distance above the Earth's surface, the temperature being greater above than at the surface. As the Earth cools, the air in contact also cools when the air is calm, until the surface and likewise the lower air strata are cooled very low and the law of decrease of temperature is reversed. It is different during the day. The increase of the temperature of the Earth's surface, and of the lower strata in contact, brings about a state of unstable equilibrium from which at once arises a vertical interchange of air, by means of ascending and descending currents, which tend to equalize, in some measure, the temperatures above and below, so that, although the Earth's surface may be heated to a much higher temperature than the air immediately above, the decrease of temperature with increase of altitude never becomes very much greater than that of about 1° C. for 100 meters, corresponding to the initial state of unstable equilibrium. The effect of the heat of the Earth's surface cannot be confined to the lower strata merely, as that of the cooling of the surface is, but, as soon as the first stratum in contact with the Earth is heated, the effect is carried to those above.

Sprüng also refers in his meteorology to the same subject and states that the inversion of the ordinary temperature relations takes place occasionally, and usually during periods of very high pressure, and when the amount of cloud and humidity is abnormally small. The cause of the increased temperature at a higher elevation is ascribed to compression of the air.

The following extract from an article on Climate in the *Encyclopædia Britannica* (written by A. Buchan, Esq.), I believe, fairly represents the opinion of English meteorologists on this subject:—

“These results which only affect the mean daily temperature in different seasons, and which are due exclusively to differences of absolute height, though of the greatest possible practical importance, yet leave untouched a whole field of climatological research—a field embracing the mean temperature of different hours of the day at different heights, for an explanation of which we must look to the physical configuration of the earth’s surface and to the nature of that surface, whether rock, sand, black soil, or covered with vegetation.

“Under this head by far the most important class of conditions are those which result in extraordinary modifications, amounting frequently to subversions of the law of the decrease of temperature with the height. This will perhaps be best explained by supposing an extent of country diversified by plains, valleys, hills and table-lands to be under atmospheric conditions favourable to rapid cooling by nocturnal radiation. Each part being under the same meteorological conditions, it is evident that terrestrial radiation will proceed over all at the same rate, but the effects of radiation will be felt in different degrees and intensities in different places. As the air in contact with the declivities of hills and rising grounds becomes cooled by contact with the cooled surface, it acquires greater density and consequently flows down the slopes and accumulates on the low-lying ground at their base. It follows, therefore, that places on rising ground are never exposed to the full intensity of frosts at night; and the higher they are situated relatively to the immediately surrounding district the less are they exposed, since their relative elevation provides a ready escape downwards for the cold air almost as speedily as it is produced. On the other hand, valleys surrounded by hills and high grounds not only retain their own cold of radiation, but also serve as reservoirs for the cold heavy air which pours down upon them from the neighbouring heights. Hence mist is frequently formed in low situations whilst adjoining eminences are clear. Along low-lying situations in the valleys of the Tweed and other rivers of Great Britain, laurels, araucarias, and other trees and shrubs were destroyed during the great frost of Christmas 1860, whereas the same species growing on relatively higher grounds escaped, thus shewing by incontestible proof the great and rapid increase of temperature with height at places rising above the lower parts of the valleys.

“This highly interesting subject has been admirably elucidated by the numerous meteorological stations of Switzerland. It is there observed in calm weather in winter, when the ground becomes colder

than the air above it, that systems of descending currents of air set in over the whole face of the country. The direction and force of these descending currents follow the irregularities of the surface and, like currents of water, they tend to converge and unite in the valleys and gorges, down which they flow like rivers in their beds. Since the place of these air-currents must be taken by others, it follows that on such occasions the temperature of the tops of mountains and high grounds is relatively high, because the counter-currents come from a great height and are therefore warmer. Swiss villages are generally built on eminences rising out of the sides of the mountains with ravines on both sides. They are thus admirably protected from the extremes of cold in winter, because the descending cold air-currents are diverted aside into the ravines and the counter-currents are constantly supplying warmer air from the higher regions of the atmosphere.

"Though the space filled by the down-flowing current of cold air in the bottom of a valley is of greater extent than the bed of a river, it is yet only a difference of degree, the space being in all cases limited and well defined, so that in rising above it in ascending the slope the increased warmth is readily felt, and, as we have seen, in extreme frosts the destruction to trees and shrubs is seen rapidly to diminish. The gradual narrowing of a valley tends to a more rapid lowering of the temperature for the obvious reason that the valley thereby resembles a basin almost closed, being thus a receptacle for the cold air-currents which descend from all sides. The bitterly cold furious gusts of wind which are often encountered in mountainous regions during night are simply the outrush of cold air from such basins."

The most important recent contribution to the subject is a memoir on "Mountain Meteorology" by Professor William Morris Davis, Harvard College, Cambridge, U. S., in which he gives a summary of the facts up to date. In this he points out that examples of inversion of temperature relations are by no means rare in mountain districts in Europe and America, and that they are most common in winter. He quotes a monograph of Professor Hann's which states that the inversion is best shewn in hill-enclosed valleys where the air stagnates and is not replaced by air from above. Such inversions, it is there pointed out, are most frequent during the passage of areas of high pressure or the prevalence of anti-cyclonic conditions. The unusual warmth in the hill regions is shewn to be an effect of the compression of the descending air, whilst the cold in the valleys and low ground is due to other causes, and takes place in spite of the descent of air into it. A remarkable example in Europe of the inversion due to the prevalence of anti-cyclonic conditions occurred in December 1879

and was the subject of numerous investigations. Hann, in his paper on *Die Temperatur Verhältnisse des Decembers 1879*, investigated the matter very thoroughly. He made in that paper a comparison between the temperature of Klagenfurth (in the valley) and Hochober (at an elevation of 5215 ft. above Klagenfurth), and states that from December 6th to 18th it was continually warmer on the mountain than in the valley. The mean difference of the 7 A. M. temperatures for these thirteen days was 23.4° in favour of the mountain, at 2 P. M. 21.2° , and at 9 P. M. 19.6° F. Other examples are given in the same memoir of the abnormal vertical temperature conditions which occasionally obtain in Europe and America. Buchan, in a paper published in the *Journal of the Scottish Meteorological Society*, states that on the 31st December 1883 the temperature at the top of Ben Nevis was 4.5° higher than at Fort William. In this case too pressure was abnormally high. Woeikoff, the Director of the Russian Meteorological Department, on the strength of certain evidence, believes there is a persistent inversion of temperature during the winter in Siberia. Inversion of temperature is also said to be of common occurrence on Mount Washington (in Massachusetts). It is also occasionally shewn by the Pikes' Peak Observations. That mountain has an elevation of 14134 feet and is 8,840 feet higher than Denver. Professor Loomis gives 39 examples of higher temperature at the top of Pikes' Peak than at Denver from four years' observations. In the most extreme cases the differences of temperature amounted to 15° and 16° . It may be noted that these inversions all occurred during the winter.

It is not necessary to quote from the earlier meteorological works of Herschel, Buchan, &c., as they only recognize the occasional occurrence of lower temperature at night in valleys than on the adjacent hills, and ascribe the effect chiefly to the flow of cold air down the sides of the hills.

Recent meteorological writings in some cases continue to ascribe the cooling almost entirely to the descent of the air from the mountain sides into the valleys, and state that the inversion of the vertical temperature relations is of comparatively frequent occurrence in mountainous districts. The facts about to be given, however, appear to indicate the probability that these inverse relations which are exhibited by the mountain observations are due to general conditions that prevail in plains as well as in mountain districts, and hence that similar relations may obtain much more generally and widely than is usually supposed. No distinct statement, however, occurs to this effect, so far as I am aware, and the evidence of inversion of the vertical temperature relations is, in the absence of suitable balloon observations, confined to differences be-

tween mountain stations and the neighbouring valley or other low-lying stations. They are hence assumed to be phenomena restricted to hills and the neighbouring confined valleys and hence of limited extent. The explanation generally given, whilst making the inversion a phenomenon of terrestrial radiation, attaches much weight to the flow of cool air down the mountain sides into the valleys, and hence suggests that it is peculiar to mountain districts.

The present paper will, I believe, prove that inversion may occur over very large plain areas, and that it has, in some cases at least, little or nothing whatever to do with air motion between hills and valleys. It will also shew that the vertical temperature relations during the cold weather in Northern India are much more variable and complicated than they have been hitherto supposed to be, and that the descensional motion which accompanies cooling of the air during the night in fine clear weather is almost entirely one of slow compression, and is not the opposite of the ascensional and convective movement which takes place largely during the day, or, in Professor Ferrel's suggestive words, "the effect of the heating of the earth's surface is not confined to the lower strata merely, as that of the cooling of the surface is, but as soon as the first stratum in contact with the earth is heated, the effect is carried to these above." The principle is, I believe, of great importance generally, and more especially in India, in connection with the production of the dry winds of the Gangetic plain during the hot weather months of March, April, and May.

The paper consists of three parts ;—1st, a statement of the normal meteorological temperature conditions of the plain and hill districts of Upper India in the month of January and of certain meteorological conditions and actions upon which temperature mainly depends ; 2nd, a statement of the more striking abnormal temperature relations of the month of January 1889 and of the cold weather period generally in Upper India ; and 3rd, a discussion of the causes which produce these unusual temperature conditions and variations.

It may be premised that one or two of the actual observations quoted for the month of January 1889 appear to me to be somewhat doubtful. I have, however, thought it best to include them, as it is on the whole more probable that they are exaggerated examples of the peculiar temperature relations about to be discussed than that they represent instrumental or observational errors.

The following table gives the average maximum temperatures of the month of January of certain selected pairs of stations in Upper India, each pair consisting of a hill station and the nearest plain station at which there is an observatory :—

Names of pairs of stations.	Difference of elevation.	Distance in miles.	Mean maximum temperature for January.		Difference of maximum temperature of the plain and hill stations.	Average rate of change of temperature vertically at the hottest period of the day per 1000 feet.
			Hill station.	Plain station.		
Quetta	5300	163	51·6°	73·3°	21·7°	4·1°
Jacobabad						
Murree	4700	30	47·8°	63·3°	15·5°	3·3°
Rawalpindi						
Simla	6200	80	51·2°	67·6°	16·4°	2·7°
Ludhiana						
Chakrata	6200	58	50·1°	69·4°	19·3°	3·1°
Roorkee						
Ranikhet	5500	90	54·0°	70·1°	16·1°	2·9°
Bareilly						
Dhubri	7300	116	44·3°	73·4°	29·1°	4·0°
Darjeeling						
Deesa	3500	40	67·1°	82·2°	15·1°	4·3°
Mount Abu						
Pachmarhi	2500	48	70·6°	80·1°	9·5°	3·8°
Hoshangabad						

A full description of these observatories and of the more important local peculiarities of exposure will be found in Mr. Blanford's Report on the Meteorology of India for 1885. It will suffice here to point out that both Ranikhet and Simla are situated at some distance within the first line of hills, whereas Murree and Chakrata are practically on the crest of the first line of elevations overlooking the plains. Assuming these as more typical of the relations between hills and plains, the preceding data shew that in Upper India the temperature near the hills decreases vertically with elevation at the hottest time of the day in the month of January very nearly 3° in 1000 feet up to a height of 7000 feet at least. The remarkably low day temperature at Darjeeling during this period as shewn by the table appears to be due to the following causes, of which the first is probably the most influential.

1st.—The great humidity and large amount of fog at that station (as in the Eastern Himalayan districts generally) in January, in which respects it contrasts strikingly with the hill stations of Upper India, where the air is, except in stormy weather, very dry and clear.

2nd.—The contiguity of the immense snow mass of Kanchinunga and neighbouring mountains, which include some of the highest peaks in the Himalayas. This area embraces an enormous extent of snow covered ground, the southern edge of which (in summer) is at a distance as the crow flies of not more than 30

or 35 miles from Darjeeling. The first line of snows is at a distance of at least 45 or 50 miles from Simla and Murree and at a distance of about 40 miles from Chakrata. The neighbouring areas of perpetual snow are of greater elevation and of considerably less extent in the case of all these stations than of Darjeeling and hence exercise a much smaller influence.

As the meteorological conditions of Darjeeling are thus essentially different from those of the hill stations of Upper India, it will be excluded from the final discussion, although data for it are given in the tables for the preliminary comparisons.

The following table gives the average minimum temperature data for the same pair of stations for the month of January.

Names of pairs of stations.	Difference of elevation.	Distance in miles.	Mean minimum temperature for January.		Difference of minimum temperature of plain and hill stations.	Average rate of decrease of temperature at the coldest period of the night per 1000 ft.
			Hill station.	Plain station.		
Quetta ... }	5300	163	29·2°	42·8°	13·6°	2·6°
Jacobabad ... }						
Murree ... }	4700	30	35·5°	37·9°	2·4°	0·5°
Rawalpindi ... }						
Simla ... }	6200	80	36·4°	43·5°	7·1°	1·1°
Ludhiana ... }						
Chakrata ... }	6200	58	35·7°	44·2°	8·5°	1·4°
Roorkee ... }						
Ranikhet ... }	5500	90	39·5°	45·9°	6·4°	1·2°
Bareilly ... }						
Dhubri ... }	7300	116	34·6°	53·5°	18·9°	2·6°
Darjeeling ... }						
Deesa ... }	3500	40	50·9°	51·1°	0·2°	0
Mount Abu ... }						
Pachmarhi ... }	2500	48	47·2°	52·5°	5·3°	2·1°
Hoshangabad ... }						

This table shews that at all these stations the average difference of temperature at night is much smaller than by day. The rate of difference is greatest in the cases of Quetta and Jacobabad, Pachmarhi, and Hoshangabad, and Darjeeling and Dhubri, for which it averages about 2° or less than half of the rate of difference for the maximum temperature. The result for Deesa and Mount Abu is so anomalous as to point to peculiar local conditions, the nature of which have, however, not yet been determined.* In the case of the pairs of stations in Upper India the average rate of change of temperature with

* I have recently (January 1890) visited these two stations: the temperature observations are carefully recorded, and are taken under the same conditions of ex-

elevation at night in January varies from 0.5° for Murree and Rawalpindi to 1.4° for Chakrata and Roorkee, and averages 1° , that is, little more than one third of the day rate of decrease of temperature vertically.

These two tables may hence be summarized as follows:—

(a). The rate of decrease of temperature with elevation at the time of maximum day temperature in the month of January averages 3° per 1,000 feet in the Western Himalayas and 4° per 1,000 feet in the Eastern Himalayas up to 7,000 feet and in the Aravalli and Vindhya Hills and perhaps also in Beluchistan.

(b). The rate of decrease of temperature with elevation at night or at the time of minimum temperature averages 1° per 1,000 feet in the Western Himalayas, 2° per 1,000 feet in the Eastern Himalayas and Vindhyas, and $2\frac{1}{2}^{\circ}$ per 1,000 feet in Beluchistan.

An interesting point in connection with the night temperature in the plains of Upper India is shewn by the data of the following table. The first column gives the average minimum temperature of the month of January at stations nearest to the hills and the second that of stations at a greater distance than those of the first column.

Plain stations near hills.	Mean minimum temperature for January. (A.)	Plain stations at considerable distance from hills.	Mean minimum temperature for January. (B.)	Difference between mean temperature of the two stations for each pair. A—B.	Horizontal distance between pair of stations.
Rawalpindi ...	37.9°	Peshawar	39.1°	-1.2°	100 miles
Sialkot ...	42.9°	Lahore	42.4°	0.5°	75 "
Ludhiana ...	43.5°	Sirsa	42.4°	1.1°	190 "
Roorkee ...	44.2°	Meerut	44.4°	-0.2°	60 "
Bareilly ...	45.9°	{ Delhi			90 "
		{ Agra			120 "
		{ Lucknow	45.9°	0°	125 "
Gorakhpur ...	48.6°	{ Allahabad	47.5°	1.1°	125 "
		{ Benares	47.9°	0.7°	100 "
Dhubri ...	53.5°	Berhampore	53.2°	0.3°	150 "

The geographical relations between Rawalpindi and Peshawar are quite different from those of the other pairs of stations, which are all situated in the great plain of Northern India stretching along the foot of the Himalayas from the North Punjab to East Bengal.

posure as at other stations in India. Several series of hourly observations of temperature during the night have been recently taken, and, as they confirm the conclusions of the present paper, I hope to discuss them in a brief paper to be submitted to the Society shortly.

The differences here are small and to some extent undoubtedly depend upon the peculiarities of position of the observatories at the observing stations. Their general uniformity, however, appears to indicate clearly that the lowest minimum temperatures in January in the great Northern or Gangetic plain of India are not found at and near the foot of the hills, but in the midst of the great plain at a distance of 100 to 200 miles from the Himalayas, or, as it might be more fully expressed, the axis of minimum or lowest night temperature in Northern India in the month of January runs nearly parallel to the Himalaya mountains at a distance from their southern base varying from 100 to 200 miles. This fact seems to be of great importance as it shews that, whatever the rapid cooling in these plains may be due to, it cannot be ascribed to the cause usually assigned for the greater cold in valleys than in hill sides, *viz.*, the sinking of air cooled by contact with the sides of the hills into the valleys. For it is not possible that the cooled air sinking down with a motion which is imperceptible to the anemometer or senses should produce the greatest effects at distance of one or two hundred miles from the foot of the hills and where the temperature is higher by day, as is shewn by the following table:—

Plain stations near hills.	Mean maximum temperature January. (A.)	Plain stations at considerable distance from hills.	Mean maximum temperature January. (B.)	Difference between mean temperature for the two stations of each pair. (B—A.)	Horizontal distance between stations.
Rawalpindi ...	63° 3'	Peshawar	64° 0'	0 7°	100 miles
Sialkot ...	66 7°	Lahore	67 6°	0 9°	75 "
Ludhiana ...	67 6°	Sirsa	70 8°	3 2°	100 "
Roorkee ...	69 4°	Meerut	70 1°	0 7°	60 "
Bareilly ...	70 1°	{ Delhi	71 0°	0 9°	90 "
		{ Agra	73 4°	3 3°	120 "
		{ Lucknow	73 8°	3 7°	125 "
Gorakhpur ...	73 4°	{ Allahabad	73 6°	0 2°	125 "
		{ Benares	74 7°	1 3°	100 "
Dhubri ...	73 4°	Berhampore	78 2°	4 8°	150 "

The following table gives mean daily temperature (*i. e.*, means of the maximum and minimum temperatures) data of the month of January for the same pairs of stations:—

Pairs of stations.	Difference of Elevation.	Mean daily temperature January.		Difference. B.—A.	Rate of decrease per 1000 ft.
		Hill station. (A.)	Plain station. (B.)		
Quetta ...	5300	40·4°	58·0°	17·6°	3·3°
Jacobabad ...	4700	41·7°	50·6°	8·9°	1·9°
Murree ...	6200	43·8°	55·6°	11·8°	1·9°
Rawalpindi ...	6200	42·8°	56·8°	14·0°	2·3°
Simla ...	5500	46·7°	58·0°	11·3°	2·1°
Ludhiana ...	7300	39·5°	63·5°	24·0°	3·3°
Chakrata ...	3500	59·0°	66·7°	7·7°	2·2°
Roorkee ...	2500	58·9°	66·3°	7·4°	3·0°
Ranikhet ...					
Bareilly ...					
Dhubri ...					
Darjeeling ...					
Deesa ...					
Mount Abu ...					
Pachmarhi ...					
Hoshangabad ...					

The data of this table are not of much importance in connection with the present discussion. They shew that the average decrease of temperature with elevation (as determined from day and night observations) varies from 1·9° per 1000 feet in the North-West Himalayas to 3·3° per 1000 feet in Beluchistan and Sind, where the general climatic conditions at that time are apparently very similar to those of the Punjab.

The following table gives the average daily range of temperature at the plain and hill stations of each pair of stations.

Pairs of stations.			Average daily range of temperature for January.		Ratio of daily range at plain station to that at hill station. (B.) (A.)
			Hill station. (A.)	Plain station. (B.)	
Quetta ...	...	...	22·4°	30·5°	1·4°
Jacobabad ...	...	...	12·3°	25·4°	2·1°
Murree ...	...	...	14·8°	24·1°	1·6°
Rawalpindi ...	...	...	14·4°	25·2°	1·7°
Simla ...	...	...	14·5°	24·2°	1·7°
Ludhiana ...	...	...	9·7°	19·9°	2·0°
Chakrata ...	...	...	16·2°	31·1°	1·9°
Roorkee ...	...	...	23·4°	27·6°	1·2°
Ranikhet ...	...	...	
Bareilly ...	...	...	
Darjeeling ...	...	...	
Dhubri ...	...	...	
Mount Abu ...	...	...	
Deesa ...	...	...	
Pachmarhi ...	...	...	
Hoshangabad ...	...	...	

This shews that in Upper India the average daily range of temperature in January is very nearly twice as great in the plains as at the adjacent hill stations at elevations of 6000 to 7000 feet. The ratio is even greater in the Eastern Himalayas, the daily range of temperature probably varying from $2\frac{1}{2}$ to 3 times as much in Assam and North Bengal as it is in the adjacent Himalayas at an elevation of 7000 feet. In the hills of Upper India this diminished range of temperature cannot be ascribed to any deficiency of radiating power, either of the sun or of the earth at this period of the year, for the air is much clearer (free from dust, smoke, etc.) and drier in the hills than the plains in Upper India, and, as shewn in the following tables, solar heat is absorbed more largely by day and terrestrial heat given out more rapidly by night in the hills than in the adjacent plain districts. The only measure for the radiating power in either case that we at present possess is the average daily difference between the readings of the solar radiation thermometer and maximum thermometer in the one case and between the readings of the grass radiation thermometer and minimum thermometer in the other. The following two tables give these differences for the pair of stations selected.

Names of pairs of stations.	Average difference between readings of solar radiation and maximum thermometer in shade. January.		Ratio of difference for hill station to that for plain station.
	Hill stations.	Plain station.	
	A.	B.	$\frac{A.}{B.}$
Quetta }	62·9°	59·9°	1·1°
Jacobabad }			
Murree }	60·4°	50·6°	1·2°
Rawalpindi }			
Simla }	62·7°	51·5°	1·2°
Ludhiana }			
Chakrata }	67·0°	54·3°	1·2°
Roorkee }			
Ranikhet }	60·7°	48·0°	1·3°
Bareilly }			
Darjeeling }	54·4°	50·1°	1·1°
Dhubri }			
Mount Abu }	62·2°	53·4°	1·2°
Deesa }			
Pachmarhi }	61·8°	55·8°	1·1°
Hoshangabad }			

This table establishes conclusively that the average direct heating power of the sun is greater at the hill stations in January than at the corresponding plain stations. And, if it might be assumed that the relative intensity in the two cases is, roughly speaking, proportional to the ratios given in the preceding table, the heating power of the sun at an elevation of 7000 feet in the Himalayas is on the average about one-fifth greater than at the level of the adjacent plains, or, in consequence of the absorbing action of the lower strata, the sun is one-sixth less powerful in heating the earth's surface at the level of the plains than it is at that of the hill stations of the Himalayas.

The following table gives similar data for nocturnal radiation from the Earth's surface:—

Names of pairs of stations.	Average difference between grass radiation thermo- meter readings and those of minimum in shade ther- mometer for January.		Ratio of differ- ence for hill station to that of corresponding plain station $\frac{A.}{B.}$
	Hill station. A.	Plain station. B.	
Quetta }	10.4°	10.1°	1.0°
Jacobabad }			
Murree }	11.4°	7.3°	1.6°
Rawalpindi }			
Simla }	12.2°	9.8°	1.3°
Ludhiana }			
Chakrata }	9.5°	7.2°	1.3°
Roorkee }			
Ranikhet }	13.0°	8.3°	1.6°
Bareilly }			
Darjeeling }	10.3°	6.9°	1.5°
Dhubri }			
Mount Abu }	17.1°	9.1°	1.9°
Deesa }			
Pachmarhi }	12.0°	8.5°	1.4°
Hoshangabad }			

These figures show that nocturnal radiation goes on much more rapidly at the hill stations than at the adjacent plain stations, and that the ratios as measured by the differences given in the preceding table are much greater than the ratios in the corresponding tables for solar radiation. Taking the average of all the stations as a rough approximation, they appear to indicate that nocturnal radiation goes on upwards of 50 per cent. more rapidly at the hill stations than at the adjacent plain stations.

This result is undoubtedly in part due to the greater length of the night (or period of effective terrestrial radiation) than of the day in the month of January in Northern India, and perhaps also to the greater clearness and homogeneity of the atmosphere arising from the stillness of the air and absence of wind at night as compared with the day. It will, however, be presently seen it is probable that the mean monthly minimum temperature at the hill stations represent an average of conditions different from that at the plain stations and hence the figures given above are almost certainly of little value for the comparison of nocturnal radiation in the plains and hills of Northern India. It is, however, evident that the figures as a whole support the inferences based on the known laws of radiation from cooling bodies. It is certain therefore that in clear weather in January, if there were no other action than mere radiation and heating and cooling of the adjacent air by contact with the Earth's surface, the Earth's surface and adjacent air would be heated to a greater extent by day and cooled to a larger amount at night at the hill stations than at the plain stations and hence the daily range of temperature might be expected on this account alone to be considerably greater (probably from 10° to 20°) at the hill stations than at the plains.

The following table gives the average cloud amount during the month at the selected stations.

Names of pairs of stations.	Mean proportion of cloud in January.		Ratio of cloud proportion of hill station to plain station. $\frac{A.}{B.}$
	Hill station. A.	Plain station. B.	
Quetta }	4.4	2.6	1.7
Jacobabad }			
Murree }	5.8	4.4	1.3
Rawalpindi }			
Simla }	5.6	3.9	1.4
Ludhiana }			
Chakrata }	4.8	3.4	1.4
Roorkee }			
Ranikhet }	4.1	3.0	1.4
Bareilly }			
Darjeeling }	5.5	1.7	3.2
Dhubri }			
Mount Abu }	2.6	2.2	1.2
Deesa }			
Pachmarhi }	2.3	2.2	1.0
Jubbulpore }			

The following table gives the average humidity of the month of January at the same pairs of stations.

Names of pairs of stations.	Mean relative humidity in January.		Ratio of average humidity of hill station to that of plain station. $\frac{A.}{B.}$
	Hill station. A.	Plain station. B.	
Quetta }	67	47	1.4
Jacobabad }			
Murree }	59	73	0.8
Rawalpindi }			
Simla }	61	68	0.9
Ludhiana }			
Chakrata }	63	65	1.0
Roorkee }			
Ranikhet }	63	67	0.9
Bareilly }			
Darjeeling }	79	77	1.0
Dhubri }			
Mount Abu }	40	38	1.0
Deesa }			
Pachmarhi }	54	60	1.1
Jubbulpore }			

These tables show that while the amount of cloud is considerably greater at the hill-stations than at the plain stations in Upper India, the air is actually on the average drier or less humid in the former case. As these results are based on day observations chiefly, it is probable if night observations of equal weight were included the difference would be even more marked.

The following is a brief general summary of the mean temperature conditions at the level of the hill stations in the Himalayas and on the adjacent plains.

(1.) The rate of decrease with elevation of the average daily temperature of the month of January is very approximately $2\frac{1}{3}^{\circ}$ per 1,000 feet or more exactly 1° per 470 feet. The rate of decrease is, however, very irregular, varying not only from day to day but also from hour to hour during the day. The rate of decrease of the average minimum or night temperature with elevation in Upper India is only about $1\frac{1}{4}^{\circ}$ per 1,000 feet and of the average maximum temperature is 3° per 1,000 feet.

(2.) The daily range of temperature is much less at the hill stations than in the adjacent plain districts and is little more than half that at the adjacent plain stations.

It also follows from the previous remarks that any explanation of the

smaller average difference of the minimum temperature at the hills and at the adjacent plain stations (or of the small night vertical range of temperature compared with the day) must recognize:—

- (a.) That the air is on the average less humid at the hills than at the adjacent plain stations in Upper India.
- (b.) That there is on the average more cloud at the hill stations.
- (c.) That the intensity of solar radiation is considerably greater at the hill stations, probably at least 20 per cent. greater.
- (d.) And that the intensity of radiation from the earth's surface at night is very considerably greater at the hills than the adjacent plains.

We now proceed to give data for the same pairs of stations for January 1889.

The following tables give the comparative temperature data of eight hill stations in Northern India and of the eight nearest plain stations at which there are observations for that month.

The first table gives the maximum temperature of each day of the month of January 1889 and the variation from the normal. The variations are obtained from the daily means of the past eleven years (1878-88) smoothed so as to give a fairly regular series. The positive sign affixed to a number in this table indicates that the actual temperature was above the normal and a minus sign that it was below it.

The second table gives similar data for the minimum temperature of the same 16 stations for the same period.

The third table gives the daily difference of the maximum temperatures for each of eight pairs of stations consisting of a hill station and adjacent plain station. In every case the maximum temperature at the plain stations exceeds that at the neighbouring hill station.

The fourth table gives the difference between the minimum temperature registered at each of the eight selected hill stations and the neighbouring plain stations. In the majority of cases the minimum temperatures at the plain stations exceed those at the plain stations in which case no sign is prefixed to the number. In a few cases the latter temperatures are the greater and this is indicated by the minus sign prefixed to the number.

Table I. giving the maximum temperature of the 24 hours preceding 8 A. M. at 16 stations for the month of January, 1889 and the variations from the normal day by day.

January.	Quetta.		Jacobabad.		Murree.		Rawalpindi.		Simla.		Ludhiana.		Mussooree.		Roorkee.		Ranikhet.		Bareilly.		Darjeeling.	
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.
1	51.6	-2.7	75.4	+1.5	53.2	+2.6	64.1	-0.1	54.5	+1.5	68.2	+0.2	54.0	?	68.8	-1.2	60.7	+4.0	72.2	+1.6	4.8	-0.4
2	60.5	+6.7	75.4	-0.2	57.1	+6.3	69.1	+4.5	56.7	+4.4	69.7	+1.8	54.0	?	70.8	+0.6	62.7	+6.8	73.7	+3.0	43.6	-0.9
3	60.5	+7.3	74.4	+1.3	59.1	+8.5	70.5	+6.0	61.7	+9.4	75.2	+7.1	60.0	?	70.8	+0.7	66.1	+10.5	71.2	+3.0	46.8	+2.3
4	56.6	-2.0	76.9	+4.2	58.6	+9.2	68.6	+4.5	66.9	+9.2	77.7	+9.5	63.5	?	72.3	+2.3	71.1	+15.7	77.2	+6.7	5.0	+6.8
5	50.6	-2.0	76.9	+4.5	49.2	-0.5	69.1	+4.9	57.3	+4.8	73.2	+5.1	61.0	?	72.8	+2.8	66.1	+10.7	75.2	+4.7	5.2	+1.7
6	56.1	+3.4	77.4	+5.0	52.7	+2.2	69.1	+4.5	50.1	-3.1	73.2	+5.3	53.0	?	71.8	+2.1	62.7	+7.2	75.2	+4.9	4.7	+0.0
7	56.6	+3.0	75.4	+2.8	56.6	+3.8	70.0	+5.4	54.1	-3.1	75.7	+8.0	52.0	?	75.8	+6.1	57.8	+2.0	76.2	+6.2	4.5	+0.6
8	57.1	+3.6	78.4	+5.5	54.7	+3.5	66.6	+2.2	59.7	+5.2	72.7	+5.2	56.0	?	73.3	+3.4	63.2	+7.1	75.2	+5.1	4.6	+0.3
9	60.5	+7.3	78.9	+5.7	58.6	+7.7	72.0	+7.7	58.2	+3.7	72.2	+5.1	60.0	?	71.8	+2.3	62.2	+6.2	72.7	+2.7	4.6	+0.3
10	59.1	+6.5	72.9	-0.5	55.2	+4.4	64.6	+6.2	47.7	+0.4	73.2	+6.2	57.5	?	70.3	+0.8	62.2	+6.1	75.2	+5.2	4.8	+2.7
11	49.6	-1.9	77.1	+4.6	42.7	-7.1	70.5	+6.2	48.5	-4.3	69.2	+2.1	52.0	?	70.3	+0.8	58.2	+2.6	75.2	+5.6	4.9	+2.2
22	46.5	-4.1	77.4	+4.2	43.7	-5.2	64.1	+0.2	50.8	-1.0	72.2	+5.1	52.0	?	76.8	+7.2	58.2	+3.0	77.7	+8.1	4.5	+0.6
13	42.0	-8.3	70.4	-2.6	42.2	-6.2	61.6	-2.1	50.7	-0.3	66.7	-0.4	58.5	?	71.8	+1.1	55.3	+0.6	76.2	+6.7	?	?
14	42.5	-8.2	72.4	-0.5	42.7	-5.5	60.1	-3.6	40.5	-10.0	67.7	+0.8	52.0	?	70.8	+1.1	55.3	+1.0	76.2	+6.6	5.0	+5.2
15	41.5	-9.4	72.4	-0.7	40.7	-6.9	62.6	-0.8	41.8	-8.6	70.7	+3.6	50.0	?	74.3	+5.0	54.3	+1.0	75.2	+5.9	5.0	+6.1
16	41.5	-10.2	67.4	-5.8	42.7	-5.1	61.1	-2.0	44.3	-6.2	70.2	+3.0	54.5	?	70.3	+1.0	49.3	-4.1	71.2	+6.3	?	?
17	33.4	-19.2	69.9	-3.1	32.1	-16.0	55.2	-8.1	44.3	-6.6	71.2	+4.0	53.5	?	75.3	+6.0	47.4	-6.3	66.1	-3.6	?	?
18	31.4	-21.6	70.9	-2.5	42.7	-5.4	61.1	-2.2	49.6	-1.5	72.7	+5.2	50.0	?	76.3	+7.6	57.3	+4.6	76.7	+7.1	47.5	+3.2
19	32.4	-20.7	68.9	-5.0	40.1	-7.7	58.6	-4.8	50.1	-1.0	71.2	+3.1	50.0	?	74.8	+7.6	57.3	+4.6	76.7	+7.1	47.5	+3.2
20	53.6	+0.6	69.9	-4.3	48.7	+0.9	65.1	+1.6	51.5	-0.3	67.2	-1.0	50.5	?	73.8	+4.6	57.3	+4.0	77.2	+6.8	51.3	+7.2
21	56.1	+3.2	71.4	-3.0	64.1	+16.8	69.1	+5.9	59.5	+8.5	74.2	+6.4	51.5	?	73.8	+5.1	64.1	+11.2	74.2	+4.7	54.1	+9.3
22	53.6	+0.9	71.4	-0.3	55.7	+9.0	66.1	+3.3	62.3	+1.6	73.7	+5.6	60.5	?	75.3	+6.6	66.1	+13.7	73.2	+3.6	45.2	+0.7
23	43.5	-7.1	74.4	-0.1	37.6	-8.7	61.1	+1.1	50.3	-3.3	66.2	-1.6	50.5	?	73.8	+6.7	64.1	+10.6	76.2	+6.2	46.0	+1.9
24	46.0	-6.0	76.9	+3.0	42.2	-3.5	67.1	+5.2	42.2	-8.4	60.7	-7.0	46.0	?	64.8	-4.4	57.3	+3.8	61.1	-9.3	48.0	+4.0
25	51.6	+0.1	73.4	0	47.7	+1.8	67.6	+5.4	43.1	-7.1	66.2	-1.6	48.0	?	69.8	-3.2	49.3	-3.9	62.6	-8.0	43.3	-0.4
26	49.6	-1.2	72.9	0	49.7	+4.2	65.1	+3.1	48.5	-1.4	69.2	+1.0	48.0	?	66.8	-0.5	54.3	+1.5	71.2	+0.3	48.1	+4.5
27	43.0	-6.8	76.4	+3.7	46.7	+1.4	63.1	+1.0	44.3	-5.4	66.2	-1.6	48.5	?	64.8	-4.4	53.3	+0.8	72.2	+1.1	47.5	+4.0
28	43.5	-5.5	70.4	-2.2	44.7	-0.3	58.1	-4.4	52.7	-1.1	69.7	+1.8	53.5	?	75.8	+6.4	58.2	+5.9	73.7	+2.7	43.2	-0.2
29	42.5	-6.0	70.4	-2.5	38.6	-6.7	54.2	-8.6	48.1	-3.4	59.7	-8.3	51.0	?	63.8	-5.6	58.2	+6.1	75.2	+4.2	46.0	+3.3
30	40.5	-7.7	66.4	-7.0	36.6	-8.4	52.7	-9.4	43.1	-6.0	63.2	-4.2	42.5	?	61.8	-7.5	58.2	+6.0	69.2	-1.4	50.1	+7.4
31	35.4	-13.2	70.4	-3.4	32.6	-13.1	54.2	-8.2	39.5	-9.3	61.2	-6.3	34.0	?	58.3	-11.1	57.3	+5.3	70.2	-0.2	42.1	0
Mean.	48.1	-3.7	73.4	+0.1	47.4	-0.7	63.9	+0.5	51.1	-0.3	69.7	+2.0	52.4	?	71.0	+1.6	58.7	+4.6	73.2	+3.1	47.5	+2.8

Table I.—Continued.

January.	Dhubri.		Abu.		Deesa.		Pachmarhi.		Hoshangabad.		General character of weather in Upper India.
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	
1	74.3	+1.0	68.1	+0.3	86.2	+3.4	70.9	+1.7	80.7	+2.3	Barometer rising, clear.
2	73.8	+0.8	72.6	+4.7	88.2	+5.2	71.4	+2.5	80.7	+2.6	Do. light clouds Punjab.
3	74.3	+1.4	73.1	+5.1	89.2	+6.3	72.3	+3.4	80.2	+2.0	Do. falling, cloudy plains and hills.
4	75.3	+2.3	71.6	+3.8	88.2	+5.5	74.8	+5.7	83.1	+4.5	Do. cloudy Punjab and hills.
5	75.8	+2.7	67.6	+0.5	87.2	+4.4	75.8	+6.3	84.1	+5.1	Do. rising rapidly, skies cloudy.
6	74.3	+1.3	67.1	+1.0	86.2	+3.4	74.8	+4.7	85.1	+5.8	Do. skies clear.
7	77.3	+4.4	70.1	+1.9	89.2	+6.8	75.8	+5.4	84.1	+4.7	Do. do.
8	76.8	+3.8	73.6	+5.2	91.3	+8.6	74.8	+4.2	83.6	+4.0	Do. falling, no cloud.
9	74.3	+1.3	72.1	+4.0	93.3	+10.7	74.8	+3.9	84.6	+5.0	Do. light cloud.
10	75.3	+2.1	71.1	+3.6	91.3	+9.3	75.3	+4.2	85.6	+5.8	Do. do.
11	75.3	+1.9	68.1	+1.1	88.2	+7.1	77.7	+6.8	88.6	+8.8	Do. moderate cloud.
12	75.3	+1.6	67.6	+1.0	87.2	+6.4	75.8	+5.1	85.6	+5.8	Do. Skies clouded, especially over hills.
13	77.8	+4.2	66.1	+0.3	84.6	+3.6	74.8	+4.2	84.6	+4.9	Do. rising, Snow on hills.
14	75.8	+2.0	62.1	+4.5	82.1	+0.7	72.8	+2.4	81.6	+1.8	Do. clear plains, overcast hills.
15	77.3	+3.3	60.6	+6.5	80.1	+2.0	72.3	+2.1	79.7	+0.1	Do. do.
16	78.8	+4.7	60.6	+6.9	78.6	+3.6	77.7	+7.3	86.6	+6.6	Do. Snow falling on hills.
17	77.8	+3.6	64.1	+3.9	79.6	+3.6	77.7	+7.3	86.6	+6.6	Do. Generally clear.
18	78.8	+4.4	67.1	+1.1	83.6	+0.3	77.7	+7.2	87.6	+7.2	Do. rising.
19	78.8	+4.7	66.1	+1.9	80.1	+3.3	76.3	+5.5	87.6	+7.2	Do. falling.
20	79.8	+5.9	64.1	+3.7	77.1	+6.2	75.8	+5.1	86.6	+6.1	Do. falling.
21	77.8	+4.1	70.1	+2.5	86.2	+3.0	77.3	+6.5	83.6	+3.0	Do. do.
22	76.3	+2.8	73.6	+6.0	92.3	+9.4	78.7	+7.9	88.6	+8.1	Do. Snow storm Murree and Quetta.
23	77.8	+4.4	71.6	+3.8	89.2	+6.6	79.7	+8.6	91.1	+10.5	Do. Snow storm hill stations.
24	78.3	+4.9	63.1	+4.8	83.1	+0.1	78.7	+7.2	88.6	+7.5	Do. rising rapidly. Snow on hills, rain on plains.
25	78.3	+0.1	64.1	+3.1	83.1	+0.5	71.4	+0.2	80.2	+1.1	Do. do.
26	75.8	+2.3	68.1	+1.7	87.2	+5.3	75.8	+4.4	84.6	+3.1	Do. moderate cloud Upper India.
27	76.3	+2.9	70.1	+4.5	89.2	+7.8	75.3	+4.1	88.1	+6.8	Do. falling, moderate cloud.
28	77.8	+4.6	70.6	+5.7	87.7	+6.8	79.7	+8.6	88.1	+7.1	Do. falling rapidly, rain N. Punjab.
29	78.3	+5.3	74.1	+9.6	91.3	+10.9	80.7	+9.6	88.6	+8.0	Do. very rapidly, rain & snow hills, overcast N. India.
30	78.8	+5.8	63.1	+1.6	84.6	+4.1	81.7	+10.5	90.6	+9.9	Do. Heavy snow storms on hills.
31	65.7	+7.2	57.1	+8.3	73.1	+2.8	75.3	+4.0	85.6	+5.1	Do. rising very rapidly, snow on hills.
Mean.	76.2	+2.8	67.7	+0.5	85.9	+3.6	75.8	+5.3	85.2	+5.2	

Table II. giving the minimum temperature daily during the month of January 1889 at 16 stations and the variations from the normal day by day.

Date.	Quetta.		Jacobabad.		Murree.		Rawalpindi.		Simla.		Ludhiana.		Mussooree.		Roorkee.	
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.
1	26.8	-0.6	38.6	-2.1	37.7	+0.8	30.9	-3.8	40.3	+3.5	41.0	-0.4	42.0	?	38.9	-3.1
2	31.8	+4.4	40.6	-0.3	45.8	+8.6	37.4	+2.1	45.1	+8.2	41.0	-0.6	41.5	?	38.9	-3.6
3	30.3	+2.1	38.6	-2.3	49.3	+12.6	36.9	+3.1	48.4	+11.6	45.6	+3.6	42.0	?	36.3	-6.5
4	33.8	+5.9	38.6	-2.2	44.8	+8.4	39.4	+0.8	46.1	+9.0	41.5	-0.6	48.5	?	45.1	+2.2
5	23.8	-3.8	41.6	+1.0	34.7	-2.0	38.4	+2.1	40.7	+2.9	49.2	+7.0	44.0	?	47.7	+5.0
6	25.3	-2.5	38.6	-2.4	37.7	+0.2	34.9	-1.5	39.3	+0.9	44.6	+2.5	39.0	?	43.1	+0.5
7	35.8	+7.2	40.1	-1.3	42.7	+5.2	37.9	+1.1	41.7	+2.7	42.0	+0.4	41.5	?	41.0	-1.3
8	25.8	-2.6	40.1	-1.3	41.2	+3.5	30.9	-5.9	42.1	+2.8	44.1	+2.4	47.0	?	40.0	-2.6
9	39.8	+11.1	42.1	+0.1	43.7	+5.9	34.9	-2.0	41.3	+2.5	39.4	-2.8	45.5	?	38.4	-4.7
10	36.8	+7.7	46.1	-1.7	30.7	-5.9	31.4	-6.0	39.3	+1.6	46.1	+8.6	44.0	?	48.7	+5.3
11	27.8	-1.4	41.1	+8.4	31.2	-4.7	42.0	+4.7	37.2	+0.4	48.2	+4.1	36.5	?	55.4	+11.4
12	34.3	+5.4	51.0	-2.2	28.2	-7.4	33.9	-3.6	28.8	-7.4	48.2	+4.1	30.5	?	54.4	+10.0
13	29.3	+0.2	40.6	-2.2	28.2	-7.4	33.9	-3.6	31.6	-4.3	47.1	+3.0	31.5	?	47.2	+2.4
14	23.8	-5.5	37.6	-5.1	28.7	-6.6	32.9	-4.6	31.6	-4.3	44.1	+0.4	35.5	?	45.1	+0.5
15	24.8	-4.5	41.6	-1.3	28.7	-6.3	30.6	-6.7	34.8	-0.6	44.1	+0.4	35.5	?	48.7	+4.0
16	26.3	-3.6	39.1	-4.2	24.7	-10.5	33.9	-3.8	32.4	-3.3	51.8	+8.4	35.5	?	46.2	+1.2
17	18.8	-11.8	39.6	-4.6	25.2	-10.2	31.9	-6.4	33.6	-2.4	46.1	+0.9	32.5	?	45.1	-0.2
18	15.3	-15.2	40.6	-3.7	27.7	-7.7	28.9	-9.6	36.4	+0.4	44.6	+0.6	37.0	?	44.6	-0.3
19	14.8	-16.1	30.5	-13.9	25.7	-9.3	26.4	-12.2	35.0	-1.1	44.1	+0.6	37.0	?	43.9	-6.3
20	15.8	-15.5	37.1	-7.6	37.7	+2.1	32.9	-6.4	37.0	+0.8	39.9	-4.0	40.0	?	45.1	-0.2
21	39.3	+8.1	38.1	-6.6	45.3	+10.1	35.9	-3.3	46.5	+10.9	39.4	-4.9	42.0	?	42.0	-2.9
22	34.8	+3.1	49.0	+4.4	32.7	-2.4	48.0	+8.9	46.5	+10.8	44.1	-0.3	47.5	?	45.1	-0.2
23	31.8	0	46.1	+1.0	34.3	-0.8	45.5	+5.8	36.0	-0.4	52.3	+7.4	35.5	?	58.8	+13.7
24	31.8	+1.1	46.1	+1.1	31.7	-3.2	37.9	-2.4	31.6	-4.8	46.1	+0.6	32.5	?	50.7	+5.0
25	34.8	+5.1	41.6	-2.3	33.7	-0.7	38.9	-1.4	34.6	-1.6	46.1	+0.6	38.5	?	48.2	+2.4
26	33.8	+4.9	55.0	+11.9	36.7	+2.8	42.0	+2.1	38.5	+2.6	49.8	+4.5	38.0	?	50.3	+4.7
27	37.3	+9.5	57.9	+15.1	36.7	+3.1	44.5	+4.8	35.2	0	44.1	-0.7	38.0	?	45.1	-0.3
28	39.8	+12.5	55.0	+12.7	32.2	-0.9	49.0	+10.1	42.1	+7.7	53.3	+9.1	41.0	?	48.2	+3.4
29	30.8	+3.1	47.1	+4.9	31.2	-1.7	49.0	+10.7	35.6	+1.7	55.7	+11.9	37.5	?	55.9	+11.7
30	29.3	+1.4	41.1	-1.5	28.2	-4.7	45.0	+7.2	28.6	-4.9	53.8	+10.3	32.0	?	53.9	+10.2
31	26.3	-2.3	42.1	-1.4	26.7	-6.5	44.0	+6.0	24.0	-9.7	43.6	+0.4	28.0	?	43.1	-0.3
Mean.	29.4	+0.2	42.7	-0.1	34.5	-1.0	31.3	-0.6	37.9	+1.5	46.1	+2.6	38.6	?	46.2	+2.0

Table II.—Continued.

Date.	Ranikhet.		Bareilly.		Darjeeling.		Dhubri.		Abu.		Deesa.		Pachmarhi.		Hoshangabad.	
	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.	Actual.	Variation.
1	46.0	+6.5	41.3	-2.7	33.8	-1.1	53.5	+0.1	51.0	-0.5	51.9	+1.0	39.3	-7.2	47.3	-4.4
2	50.0	+10.7	41.3	-2.9	35.2	+0.8	53.0	0	54.9	+3.7	51.9	+1.0	38.3	-8.1	42.8	-8.9
3	50.0	+10.5	39.8	-4.6	35.9	+1.3	53.0	+0.1	59.9	+9.0	50.9	-0.1	40.8	-5.3	44.8	-7.1
4	56.0	+16.6	46.8	+2.1	37.9	+8.3	52.5	-0.9	55.9	+4.8	51.4	+0.1	43.3	-2.6	48.3	-3.7
5	47.0	+7.1	46.8	+2.2	35.7	+1.1	54.9	+1.3	53.9	+1.5	52.4	+0.9	47.3	+0.9	48.3	-3.6
6	45.0	+4.6	47.3	+2.8	35.3	-0.1	54.9	+1.2	53.9	-2.4	50.4	-1.2	46.3	-0.3	50.3	-1.8
7	44.0	+3.1	45.3	+1.0	35.1	-0.5	53.9	+0.5	56.9	+5.4	55.4	+4.2	53.2	+6.6	57.8	+5.9
8	49.0	+8.0	40.3	-4.2	36.7	+0.5	53.5	+0.2	59.9	+8.7	60.8	+10.0	61.2	+14.3	53.3	+1.4
9	47.0	+5.8	40.8	-3.9	35.7	-0.7	53.5	+0.7	58.9	+8.0	58.9	+8.3	49.2	+1.5	54.8	+2.9
10	49.0	+8.0	45.8	+0.6	34.3	-2.3	53.5	+0.6	59.9	+9.4	59.9	+9.2	50.2	+2.0	56.3	+4.1
11	41.0	+0.5	50.3	+4.4	35.4	-1.0	54.4	+1.5	56.9	+6.8	56.9	+6.5	50.7	+2.0	54.3	+1.4
12	40.0	+0.3	48.3	+1.8	36.7	+0.7	53.0	-0.3	51.0	+1.1	57.4	+6.7	51.7	+3.1	57.3	+4.1
13	36.0	-3.6	52.3	+5.6	Not recorded		53.9	+0.6	51.0	+0.6	53.9	+2.3	55.2	+6.7	55.8	+2.6
14	34.0	-5.3	48.3	+1.5	37.3	+1.7	58.9	+5.4	49.5	-1.3	54.9	+2.8	49.7	+2.0	54.3	+0.9
15	40.0	+1.0	51.3	+4.5	35.1	-0.2	57.4	+2.5	50.5	-3.5	53.4	+0.9	49.2	+0.9	53.3	-0.1
16	40.0	+0.6	51.3	+4.5	35.2	-0.1	55.9	+2.5	50.5	-1.3	56.4	+3.3	52.2	+4.4	57.3	+4.2
17	38.0	-2.0	49.8	+3.2	Not recorded		54.9	+1.6	51.9	-0.4	53.4	+0.1	58.7	+10.6	61.3	+7.9
18	41.0	+1.0	50.3	+3.4	38.1	+3.3	54.9	+1.3	53.4	+1.2	56.9	+4.3	56.7	+8.3	57.8	+4.3
19	41.0	+1.2	50.3	+3.5	37.5	+3.0	55.4	+1.6	47.5	-4.5	50.9	-1.2	51.7	+3.8	55.3	+2.1
20	44.0	+4.4	41.3	-5.2	39.1	+4.8	56.9	+2.8	51.5	-0.5	55.9	+4.2	50.7	+3.2	60.3	+7.0
21	44.0	+4.9	44.8	-1.6	38.8	+4.7	53.9	-0.2	57.9	+5.9	53.9	+2.9	50.2	+2.4	55.8	+2.7
22	51.0	+12.2	42.8	-3.4	38.1	+4.9	54.9	+0.8	61.4	+9.4	56.4	+5.6	50.7	+3.5	55.3	+3.2
23	46.0	+6.9	53.8	+7.7	37.2	+3.9	53.0	-1.0	56.4	+4.1	61.8	+10.6	57.2	+10.3	56.8	+5.0
24	33.0	-6.3	53.3	+6.9	35.6	+2.4	56.9	+0.8	48.0	-4.1	58.4	+7.0	48.2	+0.4	55.3	+3.2
25	39.0	-0.1	42.3	-4.9	32.4	-1.2	54.9	+0.8	50.0	-1.1	49.5	-1.0	46.8	-1.0	56.8	+4.9
26	43.0	+4.2	49.3	-2.2	35.7	+2.3	53.0	-1.2	54.4	+4.3	53.9	+3.8	55.2	+8.2	57.8	+6.4
27	43.0	+4.8	47.3	+0.2	35.9	+2.0	53.9	-0.3	58.9	+9.6	59.9	+10.4	61.2	+14.3	59.3	+8.1
28	46.0	+8.3	50.3	+3.5	36.1	+2.7	55.9	+1.9	58.4	+9.7	63.3	+14.1	53.2	+6.7	58.8	+7.7
29	40.0	+2.4	56.8	+10.4	38.2	+4.7	55.4	+1.7	53.4	+4.9	60.4	+11.1	60.7	+15.0	60.8	+10.1
30	37.0	-0.9	58.8	+12.8	39.2	+6.3	60.4	+7.2	46.0	-2.8	57.9	+8.1	62.2	+16.8	62.3	+11.7
31	32.0	-6.2	50.3	+4.6	33.7	+1.4	55.4	+2.5	44.1	-5.6	57.9	+7.5	54.2	+8.6	59.3	+8.1
Mean.	43.0	+3.5	47.7	+1.8	36.2	+1.8	54.8	+1.3	53.7	+2.8	55.7	+4.6	51.4	+4.2	55.2	+2.7

Table III. giving the difference day by day of the maximum temperature at 8 selected pairs of stations (*viz.*, each pair consisting of a hill station and adjacent plain station) named in the headings.

1889.	Quetta & Jacobabad.	Murree & Rawalpindi.	Simla & Ludhiana.	Mussoorie & Roorkee.	Rani-khet & Bareilly.	Darjeeling & Dhubri.	Mt. Abu & Dessa.	Pachmarhi & Hoshangabad.	General character of weather.
Jan. 1	23.8	10.9	13.7	14.8	11.5	29.7	18.1	9.8	Barometer rising, clear.
2	12.9	12.0	13.0	16.8	11.0	30.2	15.6	9.3	Do. light cloud, Punjab.
3	13.9	11.4	13.5	10.8	5.1	27.7	16.1	7.9	Do. falling, cloud plains and hills.
4	20.3	10.0	10.8	8.8	6.1	24.3	16.6	8.3	Do. clouds, Punjab and Hills.
5	26.3	19.9	15.9	11.8	9.1	23.2	19.6	8.3	Do. rising, rapidly, skies cloudy.
6	21.3	16.4	23.1	18.8	12.5	27.2	19.1	10.3	Do. Sky clear.
7	18.8	13.4	21.6	23.8	18.4	31.7	19.1	8.3	Do. do. do.
8	21.3	11.9	13.0	17.3	12.0	30.2	17.7	8.8	Do. falling, no clouds.
9	18.4	13.4	14.0	11.8	10.5	27.7	21.2	9.8	Do. light cloud.
10	13.8	9.4	15.5	12.8	13.0	30.7	20.2	10.3	Do. do. "
11	28.3	27.8	20.7	18.3	17.0	26.3	20.1	10.9	Do. Moderate cloud.
12	30.9	20.4	21.4	24.8	19.5	29.7	19.6	9.8	Do. Skies clouded, especially hills.
13	28.4	19.4	16.0	13.3	20.9	p	18.5	9.8	Do. Snow on hills
14	29.9	17.4	27.2	18.8	20.9	25.8	20.0	8.8	Do. Clear over plains, overcast hills.
15	30.9	21.9	28.9	24.3	20.9	26.8	19.5	7.4	Do. "
16	25.9	18.4	25.9	15.8	21.9	29.3	18.0	7.3	Do. Snow on hills.
17	36.5	23.1	26.9	21.8	18.7	p	15.5	8.9	Do. Generally clear.
18	36.5	18.4	23.1	26.3	19.4	31.3	16.5	9.9	Do. falling.
19	36.5	18.5	21.1	24.3	24.9	27.3	14.0	11.3	Do. rising.
20	16.3	16.4	15.7	23.3	19.9	28.8	13.0	10.8	Do. falling, clear.
21	15.3	5.0	14.7	22.3	10.1	23.8	16.1	6.3	Do. "
22	20.8	10.4	11.4	14.8	7.1	31.2	18.7	9.9	Do. Snow storm Murree & Quetta.
23	28.9	23.5	15.9	23.8	12.1	31.7	17.6	11.4	Do. Snow storm hill stations.
24	30.9	24.9	18.5	18.8	3.8	30.3	20.0	9.9	Do. rising rapidly, snow on hills, rain on plains.
25	21.8	19.9	23.1	22.8	13.3	30.2	19.0	8.8	Do. "
26	23.3	15.4	20.7	21.8	16.9	27.8	19.1	8.8	Do. Moderate cloud, Upper India.
27	33.4	16.4	21.9	16.3	18.9	28.8	19.1	12.8	Do. falling, Moderate cloud.
28	26.9	13.4	17.0	22.3	15.5	34.7	17.1	8.4	Do. rapidly, rain N. Punjab.
29	27.9	15.6	11.6	12.8	17.0	32.2	17.2	7.9	Do. very rapidly, overcast N. India.
30	25.9	16.1	20.1	19.3	11.0	28.8	21.5	8.9	Do. Snow on hills, rain in plains.
31	35.0	21.6	21.7	24.3	12.9	23.6	21.0	10.3	Do. rising very rapidly, snow on hills.
Mean ...	25.3	16.5	18.6	18.6	14.6	28.7	18.2	9.3	
Nor. mean	21.7	15.5	11.4	17.3	16.1	29.1	15.1	9.5	
Diff. from Normal ...	+ 3.6	+ 1.0	+ 7.2	+ 1.3	- 1.5	- 0.4	+ 3.1	- 0.2	

The following table (Table IV) gives the differences day by day of the night or minimum temperature at the pairs of stations named in the headings, a negative sign indicating that the night temperature was higher at the hill than at the corresponding plain station.

Table IV.

1889.	Quetta & Jacobabad.	Murree & Rawal Pindi.	Simla & Ludhi- ana.	Mussoo- ree & Roorkee.	Ranikhet & Bareilly.	Darjee- ling & Dhubri.	Mt. Abu & Deesa.	Pach- marhi & Hoshan- gabad.
Jan. 1	11·8	-6·8	0·7	-3·1	-4·7	19·7	0·9	8·0
2	8·8	-8·4	-4·1	-2·6	-8·7	17·8	-3·0	4·5
3	8·3	-12·4	-2·8	-5·7	-10·2	17·1	-9·0	4·0
4	4·8	-5·4	-4·6	-3·4	-9·2	14·6	-4·5	5·0
5	17·8	3·7	8·5	3·7	-0·2	19·2	-0·5	1·5
6	13·3	-2·8	5·3	4·1	2·3	19·6	-3·5	4·0
7	4·3	-4·8	0·3	-0·5	1·3	18·8	-1·5	4·6
8	14·3	-10·3	2·0	-7·0	-8·7	16·8	0·9	-7·9
9	2·3	-8·8	-1·9	-7·1	-6·2	17·8	0	5·6
10	9·3	4·8	7·5	4·7	-3·2	19·2	0	6·1
11	13·3	0·7	6·8	17·9	9·3	19·0	0	3·6
12	16·7	10·8	11·0	10·7	8·3	16·3	6·4	5·6
13	11·3	5·7	19·4	23·9	16·3	?	2·9	0·6
14	13·8	4·2	15·5	15·7	14·3	21·6	5·4	4·6
15	16·8	1·9	9·3	9·6	11·3	22·3	5·4	4·1
16	12·8	9·2	19·4	13·2	11·3	20·7	5·9	5·1
17	20·8	6·7	12·5	10·7	11·8	?	1·5	2·6
18	25·3	1·2	8·2	12·6	9·3	16·8	3·5	1·1
19	15·7	0·7	9·1	7·6	9·3	17·9	3·4	3·6
20	21·3	-4·8	2·9	-1·1	-2·7	17·8	4·4	9·6
21	-1·2	-9·4	-7·1	3·1	0·8	15·1	-4·0	5·6
22	14·2	15·3	-2·4	-5·5	-8·2	16·8	-5·0	4·6
23	14·3	11·2	16·3	23·3	7·8	15·8	5·4	-0·4
24	14·3	6·2	14·5	18·2	20·3	21·3	10·4	7·1
25	6·8	5·2	11·5	14·7	3·3	22·5	-0·5	10·0
26	21·2	5·3	11·3	12·3	6·3	17·3	-0·5	2·6
27	20·6	7·8	8·9	7·1	4·3	18·0	1·0	-1·9
28	15·2	16·8	11·2	7·2	4·3	19·8	4·9	5·8
29	16·3	17·8	20·1	18·4	16·8	17·2	7·0	0·1
30	11·8	16·8	25·2	21·9	21·8	21·2	11·9	0·1
31	15·8	17·3	19·6	15·1	18·3	21·7	13·8	5·1
Mean ...	13·3	3·1	8·2	7·7	4·7	18·6	2·0	3·7
Normal mean	} 13·6	2·4	7·1	8·5	6·4	18·9	0·2	5·3
Diff. from normal	} -0·3	+0·7	+1·1	-0·8	-1·7	-0·3	+1·8	-1·6

An examination of the preceding data shews that there were three periods in January 1889 during which the minimum temperature of the hill stations was in excess of that at the neighbouring plain stations. These were—

1st. From the 1st to the 4th.

2nd. From the 8th to the 11th.

3rd. From the 20th to the 22nd.

The abnormal temperature relations were most marked during the

first period, and we shall therefore use chiefly the data of that period in the discussion.

During the first period extending from the 1st to the 4th the minimum temperature was on every night several degrees higher at the hill stations than at the adjacent plain stations. The minimum temperature on the night of the 3rd for example was $12\frac{1}{2}^{\circ}$ higher at Murree than at Rawalpindi, 3° higher at Simla than at Ludhiana, 5° higher at Mussooree than at Roorkee, and 10° higher at Ranikhet than at Bareilly.

The following method of stating the facts will shew that the inversion of the temperature relations was not confined to the neighbourhood of the hills only. On the night of the 3rd (or early morning of the 4th) the minimum temperature at Murree, Simla, Ranikhet, and Mussooree was higher than at all the plain stations in the Punjab, North-Western Provinces (except Jhansi), Rajputana, Sind, Central India, and the greater part of Behar and Bengal and the Central Provinces.

The following statement gives exact data for representative stations in each province.

Hill stations.	Minimum temperature 3rd January.	Province.	Plain stations.	Minimum temperature 3rd January.	Difference between minim. temp. of Murree and plain stations.	Difference between minim. temp. of Simla and plain stations.	Difference between minim. temp. of Ranikhet and plain stations.
Murree ... {	49.3	Punjab	Rawalpindi	36.9	-12.4	-11.5	-13.1
Simla ... {	48.4		Lahore	37.2	-12.1	-11.2	-12.8
			Sirsa	39.1	-10.2	-9.3	-10.9
			Jacobabad	38.6	-10.7	-9.8	-11.4
		Rajutana	Jeypore	42.2	-7.1	-6.2	-7.8
			Indore	44.8	-4.5	-3.6	-5.2
		Central Provinces	Nagpur	50.2	+0.9	+1.8	+0.3
			Khandwa	44.0	-5.3	-4.4	-6.0
			Jubbulpore	38.9	-10.4	-9.5	-11.1
		Berar	Akola	43.2	-6.1	-5.2	-6.8
		Bombay	Malegaon	44.5	-4.8	-3.9	-5.5
			Poona	49.0	-0.3	+0.6	-1.0
Chakrata {	53.6	N. W. Provinces	Agra	43.6	-5.7	-4.8	-6.4
Ranikhet {	50.0		Lucknow	41.0	-8.3	-7.4	-9.0
			Allahabad	42.7	-6.6	-5.7	-7.3
			Patna	46.9	-2.4	-1.5	-3.1
		Behar	Durbhunga	50.4	+1.1	+2.0	+0.4
			Hazaribagh	49.3	0	+0.9	-0.7
			Calcutta	48.8	-0.5	+0.4	-1.2
			Burdwan	48.3	-1.0	-0.1	-1.7
		Bengal	Jessore	46.9	-2.4	-1.5	-3.1
			Burrisal	49.1	-0.2	+0.7	-0.9
			Dacca	54.2	+4.9	+5.8	+4.2
			Saugor Island	51.2	+1.9	+2.8	+1.2
		Assam	Dhubri	53.2	+3.9	+4.8	+3.2

The minus sign in the preceding table indicates that the plain station to which it refers had a lower minimum temperature than the hill station with which it is compared and the plus sign that it had a higher temperature.

The preceding table shews over what an extensive area in Northern and Central India it is possible for the minimum temperature to be considerably (from 1° to 12°) below that of the hill stations in Upper India.

Table I. shews that the inversion of temperature obtained on at least eleven nights during the month. The following examples from previous years, which examination shews to be fairly average cases, will indicate to what extent the temperature variations of January 1889 were abnormal. In January 1888 the night temperature of Mussooree ranged from 5.6° above that of Roorkee to 21.8° below it (giving a total range of 27.4). The average difference of temperature was 8.1° for the month, which is almost identical with the normal average (8.5°). The minimum temperature at Mussooree was in excess of that of Roorkee on only three nights of the month. In January 1886 the night or minimum temperature at Simla ranged from 2.8° above that at Ludhiana to 23.5° below (giving a total range of 26.3°) and was above that at Ludhiana on three nights only during the month. The difference between the minimum temperatures at these two stations averaged 10° . It is not necessary to multiply cases, as all that have been examined give similar evidence. Hence it appears that in ordinary seasons the minimum temperature may be on two or three nights in January in slight excess at the hill stations of Upper India as compared with the adjacent plain stations of the Punjab and North-Western Provinces. These figures hence establish that, although inversion of the normal vertical temperature relations is not infrequent in the month of January in Upper India, it was of abnormal frequency in January 1889. It was undoubtedly related to or connected with the holding off of the winter rains in that month. Anticyclonic conditions prevailed in Upper India with unusual persistency, and it was not until the end of the month that general rain accompanying a depression and cold weather storm occurred in the plains and heavy general snow in the hills. Hence the high temperature was undoubtedly associated with anticyclonic conditions of pressure, as has been found to be the case in Europe and the United States during similar vertical temperature relations, and also with the protracted delay in the depression of the snow line in the hills during winter produced by general snowfall.

The preceding paragraphs have stated fully one important feature of the anomalous temperature conditions of the month of January 1889. Before proceeding to discuss the causes of these features, it is desirable to trace the varying temperature relations between the plains and the hills in Upper India more exactly. There are three prominent types of

weather conditions and relations in the hills and plains of Upper India during the cold weather. These are as follows :—

1st.—The prevalence of fine clear weather with light winds or calms in the hills and plains. These conditions accompany prolonged anticyclonic pressure conditions of moderate intensity in Upper India, and may be described as “ordinary anticyclonic conditions.” They obtain frequently during the cold weather.

2nd.—The prevalence of disturbed or stormy weather in the hills and plain districts. This type of weather is due to the formation, passage, or existence of cold weather depressions. Skies are heavily clouded, rain falls more or less generally in the plains of Upper India, and heavy general snow is received in the higher mountain regions down to a level determined chiefly by the intensity of the storm. Winds are weak in the plains, but their directions usually indicate feebly marked cyclonic circulation about an ill-defined centre. The winds are on the other hand often strong or violent and the weather very stormy in the hill districts for periods varying in length from a few hours to several days. These periods may be described as those of “cold weather cyclonic storms.”

3rd.—The prevalence of unusually bright clear cool weather such as always obtains over the whole of Northern India, after the breaking up of a large and well marked cold weather storm. In this case, a strong and steady cool westerly current flows from Upper India and the adjacent hills over the whole of Northern India as far east as the Bengal coast. The air is remarkably dry and bracing. The change of conditions is most marked in Bengal, where the weather during the previous unsettled period is usually damp, cloudy, and warm, with light southerly winds.

These are the three chief types of weather in Northern India during the cold weather period extending from November to February or March. They merge into each other, more especially (3) and (1). Again it frequently happens that small depressions pass over Upper India which give a brief period of cloudy weather without rain in the plains, and light local rain or snow showers in the hills. The precipitation in this case is almost entirely confined to the higher elevations. This type of weather gives rise to somewhat different temperature relations than (2). They will, however, be included in (2) as it is hardly possible to differentiate between all the numerous varieties of cold weather storms.

The temperature conditions and relations in ordinary anticyclonic weather in Upper India will be sufficiently shewn by the following data given in three small tables for the two pairs of stations, Murree and

Rawalpindi and Simla and Ludhiana. The first table gives the daily range of temperature at three pairs of stations on six days of January 1889, when anticyclonic conditions accompanying inversion of vertical temperature relations obtained in Upper India.

Day of month.	Murree.	Rawalpindi.	Simla.	Ludhiana.	Ranikhet.	Bareilly.
3rd	9·8°	33·6°	13·3°	29·6°	16·1°	31·4°
4th	13·8°	29·2°	20·8°	36·2°	15·1°	30·4°
8th	13·5°	35·7°	17·6°	28·6°	14·2°	34·9°
9th	14·9°	37·1°	16·9°	32·8°	15·2°	31·9°
21st	18·8°	33·2°	13·0°	34·8°	20·1°	29·4°
22nd	?	?	15·8°	29·6°	15·1°	30·4°
Mean daily range of selected periods ...	14·2°	33·8°	16·1°	31·9°	16·0°	31·4°
Normal daily range of selected periods ...	13·1°	27·0°	15·3°	25·0°	14·9°	24·9°
Difference ...	+1·1°	+6·8°	+0·8°	+6·9°	+1·1°	+6·5°

This table shews a considerable amount of irregularity at the hill stations in the daily range of temperature during these periods of inversion of night temperature. On the other hand the daily range of temperature at the level of the plains is always excessive and approximately uniform as shewn by the Rawalpindi and Ludhiana data.

The following table gives the variations of the maximum and minimum temperature on the same days at the hill stations from their normal values at the same stations, a plus sign indicating that temperature was in excess and a minus sign that it was below the normal.

Day of month.	Murree.		Simla.		Ranikhet.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
3rd	+ 9·7°	+ 12·6°	+ 9·5°	+ 11·6°	+ 10·7°	+ 10·5°
4th	+ 9·6°	+ 8·4°	+ 14·4°	+ 9·0°	+ 15·7°	+ 16·6°
8th	+ 3·8°	+ 3·5°	+ 5·2°	+ 2·8°	+ 7·2°	+ 8·0°
9th	+ 7·8°	+ 5·5°	+ 4·5°	+ 2·5°	+ 6·1°	+ 5·8°
21st	+ 16·8°	+ 10·1°	+ 8·5°	+ 10·9°	+ 11·2°	+ 4·9°
22nd	?	?	+ 11·6°	+ 10·8°	+ 13·7°	+ 12·2°
Mean variation from normal during periods ...	+ 9·5°	+ 8·1°	+ 9·0°	+ 7·9°	+ 10·8°	+ 9·7°

This table shews conclusively that during these periods of inverted temperature relations temperature was excessive at the hill stations and the excess was nearly as marked in the night as in the day temperature.

The following gives similar data for the neighbouring plain stations :—

Day of month.	Rawalpindi.		Ludhiana.		Bareilly.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
3rd	+6.4°	+0.8°	+7.0°	+3.6°	+0.7°	-4.6°
4th	+4.3°	+3.1°	+9.6°	-0.6°	+1.7°	+2.1°
8th	+2.3°	-5.9°	+5.6°	+2.4°	+5.2°	-4.2°
9th	+7.8°	-2.0°	+5.2°	-2.8°	+2.7°	-3.9°
21st	+5.9°	-3.3°	+6.4°	-4.9°	+4.7°	-1.6°
22nd	...	...	+5.6°	-0.3°	+3.6°	-3.4°
Average ...	+5.3°	-1.5°	+6.6°	-0.4°	+3.1°	-2.6°
Range of variation ...	6.8°		7.0°		5.7°	

These figures are very consistent and establish that in these periods under discussion the day temperature was considerably above the average at the plain stations and the night temperature was generally below it but by smaller amounts. They also shew that what may be termed the range of variation from the normal diminished from west to east in the plain of Northern India.

Hence it may be inferred that the temperature conditions of periods of ordinary anticyclonic weather in Upper India are :—

(a.)—Increased day and night temperatures at the hill stations, the excess being nearly as great in the night as it is in the day temperatures, so that practically the daily range is unaltered.

(b.)—Increased day and decreased night temperature and hence a much greater daily range of temperature at the plain stations.

(c.)—When these conditions are most pronounced, in consequence of the opposite variations of the night temperatures at the hill and plain stations, the minimum temperature is occasionally during such periods several degrees higher at the hill stations than in the adjacent plains. The data for January 1889 also shew that the low temperature in the plains, more especially when compared with the hill stations, is not a phenomenon of valleys or of the low lying districts in the immediate neighbourhood of the hills, but may extend over the whole of Northern and Central India, and therefore to a distance of some hundreds of miles from the mountains of Northern India.

The same tables (I to IV) also give three examples of very low temperature of the hill stations during stormy weather. These are :—

1st, the night of the 13th.

2nd, the night of the 23rd.

3rd, the nights of the 30th and 31st.

The last is the most striking example and is therefore best adapted to illustrate the temperature relations between the hills and plains during cold weather storms.

The following gives a brief description of the character of these disturbances taken from the India monthly weather report for January 1889.

"The barometer began to fall briskly on the afternoon of the 8th in Upper Sind and Beluchistan, and a very shallow depression was formed on the 9th, which followed the same course as the previous disturbance and gave moderately heavy snow to the Punjab Himalayas on the 10th, and brought the snow line down to below 9,000 feet. The weather continued somewhat disturbed in Northern India for three days longer, and light showers fell at the hill stations on the 12th, and in Behar, Chutia Nagpore, and Central Bengal on the 13th. Pressure increased steadily until the 17th, when very strongly marked anti-cyclonic conditions, with fine, clear, cool weather and strong westerly or north-westerly winds, prevailed over the whole of Northern India. The highest pressures of the month were recorded on the morning of the 17th, the absolute maximum being 30·38" at Peshawar. No change of importance occurred until the 22nd, when the barometer fell briskly in North-Western India. The disturbance then initiated differed considerably in character from the previous. There were two separate areas of disturbance in which the barometer fell rapidly, and more or less general rain was received. The first included the Punjab Himalayas and adjacent plains from Sealkot to Roorkee, and the second comprised the greater part of Rajputana and Indore. The disturbance in the Punjab passed away after giving moderate snow in the hills on the afternoon of the 23rd and light showers in the adjacent plains. That which originated in Rajputana drifted during the next two days eastward into East Bengal and Burma, and gave moderate general rain to the North-Western Provinces, Central India, and light local showers in Behar, Bengal, and Assam. A short interval of fine weather followed until the afternoon of the 27th, when the first large and important cold weather storm of the year was initiated. It was, like the previous, a double disturbance. It consisted in part of a shallow depression which passed into Sind from Beluchistan on the 28th and advanced during the next three days in an east-south-east direction across the head of the Peninsula into Upper Burma, to which it gave cloudy weather on the 1st February. It apparently filled up very slowly in that area and gave low pressure in Burma until the 5th. The appearance of this depression in Sind on the

28th was followed on that day by a very rapid fall of the barometer in the North Punjab and the formation of an independent deep depression, the centre of which was to the north of Rawalpindi and Peshawar on the morning of the 29th. It intensified considerably during the day and marched slowly to the south-east along the hills, to which it gave very stormy weather and heavy snowfall during the next forty-eight hours. A very rapid rise of the barometer set in on the 31st, and the depression filled up very rapidly. This deep depression very largely modified the distribution of pressure over the whole of North-Western and Central India, and obscured the shallow depression in Central India on the 29th and 30th; but with the disappearance of the former on the 31st, the latter again became clearly marked and formed the chief feature of the weather during the next two days. The double disturbance gave a large general and much needed supply of rain to the greater part of Northern India, including the Punjab, Rajputana, Central India, the North-Western Provinces and Behar, and showers in Bengal."

The following gives the precipitation at the hill stations during the storm :—

	January 1889.					February 1889.		Total fall during period.
	27	28	29	30	31	1	2	
Murree ...	—	0·71	2·49	2·45	0·75	1·05	—	6·75
Simla ...	0·07	—	0·78	1·93	1·65	0·30	—	4·73
Chakrata...	—	—	0·75	2·98	1·44	0·28	—	5·45
Ranikhet...	—	—	0·90	2·52	1·92	0·25	—	5·59

At the three first named stations rain and sleet fell during the earlier part of the disturbance, but it changed afterwards to snow, which fell steadily during the night of the 30th and the greater part of the 31st and 1st, when the weather cleared up rapidly. At Ranikhet little or no snow fell. The depth of snow at the end of the storm at Simla was quite three feet, at Chakrata about the same, and at Murree about five feet. The nights of the 30th and 31st were hence stormy with strong winds, thick cloud, and constant snowfall. The cloud canopy extended over the greater part of Northern India, or over the East Punjab, N.-W. Provinces, Behar, and East Rajputana.

The following gives the minimum temperature on these nights at Simla and at a large number of stations in the plains.

Date.	Hill station.	Minimum temperature. A.	Plain station.	Province.	Minimum temperature. B.	Difference between hills and plains. B—A
Night of 30th Jan. 1889.	Simla	28°6'	Ludhiana	Punjab	53°8'	25°2'
			Lahore		49°0'	20°4'
			Lucknow	N.-W. P.	58°9'	30°3'
			Allahabad		59°2'	30°6'
			Patna	Bengal	59°8'	31°2'
			Calcutta		62°3'	33°7'
			Jeypore	Rajputana	54°1'	25°5'
			Nagpur	Central Provinces	62°3'	33°7'
			Deesa	Bombay	57°9'	29°3'
			Jacobabad	Sind	41°1'	12°5'
Do. of 31st Jan. 1889.	Simla	24°0'	Lahore	Punjab	42°1'	18°1'
			Lucknow	N.-W. P.	56°9'	32°9'
			Allahabad		59°7'	35°7'
			Patna	Bengal	59°8'	35°8'
			Calcutta		61°8'	37°8'
			Jeypore	Rajputana	41°2'	17°2'
			Nagpur	Central Provinces	59°3'	35°3'
			Deesa	Bombay	57°9'	33°9'
			Jacobabad	Sind	42°1'	18°1'

These figures indicate that over the whole of the plains of Northern India the minimum night temperature was from 20° to 30° higher than at the hill stations of Upper India. These very large differences (in the opposite directions to those discussed in the previous case) were mainly due to the abnormally low temperature in the hills, and in part to the increased night temperature in the plains due to the presence of clouds diminishing radiation. The characteristic features of these periods will be best shewn by examining the whole of the temperature data of the same stations as in the previous case.

The following gives the daily range of temperature on six days of the month during these stormy weather periods.

Date.	Murree.	Rawalpindi.	Simla.	Ludhiana.	Ranikhet.	Bareilly.
11th	12·0°	28·5°	9·2°	23·1°	17·2°	24·9°
13th	14·0°	27·7°	21·9°	18·5°	19·3°	23·9°
23rd	3·3°	15·6°	14·3°	13·9°	18·1°	22·4°
24th	10·5°	29·2°	10·6°	14·6°	24·3°	7·8°
30th	8·4°	7·7°	14·5°	9·4°	21·2°	10·4°
31st	5·9°	10·2°	15·5°	17·6°	25·3°	19·9°
Average daily range during selected periods ...	9·0°	19·5°	14·3°	16·2°	20·9°	18·2°
Normal daily range of month...	12·3°	25·4°	14·8°	24·1°	14·5°	24·2°

The figures show that at such periods the daily range is slightly diminished at the hill stations, but is very greatly reduced at the plain stations.

The following table gives the variations from the normal of the maximum and minimum temperatures on the same dates at the hill stations, a plus sign indicating excess and a minus sign defect.

Date.	Simla.		Murree.		Chakrata.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
11th	-3·3°	+1·6°	-6·2°	-5·9°	-2·8°	+0·8°
13th	-0·3°	-7·4°	-6·2°	-7·4°	+3·6°	+1·8°
23rd	-0·3°	-0·4°	-8·7°	-0·8°	+16·8°	+2·4°
24th	-8·4°	-4·8°	-3·5°	-3·2°	+4·2°	-0·9°
30th	-6·0°	-4·9°	-8·4°	-4·7°	+2·2°	-3·2°
31st	-9·3°	-9·7°	-13·1°	-6·5°	-10·7°	-5·0°
Mean.	-4·6°	-4·3°	-7·7°	-4·8°	+2·2°	-0·7°

This table shows that during these periods the night and day temperatures at the hill stations were considerably reduced below the normal and by nearly equal amounts.

The Chakrata observations at this period, it should be noted, were apparently vitiated by large occasional errors, but in examining their figures it should be taken into consideration that the only stormy weather which influenced Chakrata was that of the 30th and 31st.

The following table gives similar data for the adjacent plain stations.

Date.	Ludhiana.		Rawalpindi.		Roorkee.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
11th	+2.1°	+2.6°	+6.6°	+6.0°	+0.7°	+11.4°
13th	-0.4°	+4.1°	-2.1°	-3.6°	+2.1°	+10.0°
23rd	-1.6°	+7.4°	-1.1°	+5.8°	+6.7°	+13.7°
24th	-7.0°	+0.6°	+5.2°	-2.4°	-4.4°	+5.0°
30th	-4.2°	+10.3°	-9.4°	+7.2°	-7.5°	+10.2°
31st	-6.3°	+0.4°	-8.2°	+6.0°	-11.1°	-0.3°
Mean.	-2.9°	+4.2°	-1.5°	+3.3°	-2.3°	+8.3°

These data shew that at the plain stations the range of temperature was diminished not only by decreased day temperature but also by increased night temperature to an equal or greater amount. Hence during these storms the temperature was reduced at the hill stations throughout, whereas at the plain stations it was raised at night by amounts nearly equal to the decrease in the daytime, and there was practically no alteration in the daily range at the hill stations, whereas it was largely reduced at the plain stations.

It hence follows that the temperature relations which obtain during stormy weather accompanied with snow in the hills and rain showers in the plains are:—

- 1st. Diminished temperature throughout the whole day at the hill stations and hence the maximum and minimum temperatures are reduced below the normal by nearly equal amounts and the daily range of temperature is only slightly affected.
- 2nd. At the plain stations temperature is below the normal to a moderate extent in the day, and is considerably above it at night, and hence the daily range of temperature is very considerably reduced.
- 3rd. In consequence of the decreased night temperature at the hill stations and increased night temperature at the plain stations, the differences of the minimum temperature at hill stations and adjacent plain stations are then exaggerated and are occasionally 10° to 15° greater than the average differences.

The third type of temperature relations which obtain in the cold

weather in Northern India are those which hold during the fine clear weather and strongly marked anticyclonic conditions that follow a severe cold weather storm. There is no marked example in the temperature data of January 1889. The conditions are shewn in the weather which followed the snow storms of the 30th, 31st January, and 1st February in the hills of Upper India.

The account of the storm has been given in a preceding paragraph. The snowfall which it gave was far heavier in the Punjab Himalayas than in the N.-W. Provinces and Nepal hills. At Simla an average depth of 3 feet lay on the ground at the end of the storm. The weather cleared up in the Punjab on the 1st, and fine clear weather prevailed for some days. The skies cleared in the N.-W. Provinces on the 2nd and 3rd, and in Bengal on the 4th and 5th.

The two following tables give the maximum temperatures and their variations from the normal at eight typical stations in Northern India during the period from the 30th January to 5th February.

Station.	Maximum temperature.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	32·6°	34·1°	40·7°	43·7°	47·7°	53·7°	45·7°
Simla ...	39·5°	28·8°	35·8°	36·5°	41·3°	51·2°	51·5°
Lahore ...	58·5°	60·5°	60·0°	58·0°	62·5°	65·5°	67·0°
Roorkee ...	58·3°	65·8°	62·8°	59·8°	62·8°	64·8°	68·3°
Lucknow ...	73·1°	70·1°	69·1°	67·1°	68·1°	68·6°	71·6°
Patna ...	65·2°	68·2°	67·7°	67·7°	70·2°	69·2°	68·2°
Bardwan ...	81·5°	84·0°	76·5°	76·0°	78·0°	74·5°	74·5°
Calcutta ...	82·5°	83·5°	76·0°	72·5°	75·5°	73·5°	74·5°

Station.	Variation from normal of maximum temperature of						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	-13·1°	-11·4°	-4·7°	-1·2°	+3·1°	+8·7°	+0·1°
Simla ...	-9·3°	-20·8°	-13·1°	-12·4°	-8·2°	+0·7°	+0·1°
Lahore ...	-9·7°	-7·8°	-8·2°	-10·2°	-5·5°	-2·5°	-1·1°
Roorkee ...	-11·1°	-3·9°	-7·0°	-10·4°	-7·9°	-6·4°	-3·2°
Lucknow ...	-0·8°	-3·8°	-5·3°	-7·8°	-8·6°	-7·5°	-4·8°
Patna ...	-8·4°	-5·6°	-6·3°	-6·5°	-4·5°	-5·9°	-7·4°
Bardwan ...	+2·3°	+4·8°	-2·7°	-3·7°	-2·2°	-6·4°	-6·9°
Calcutta ...	+4·9°	+5·9°	-1·6°	-5·5°	-3·8°	-5·7°	-5·2°

These observations show that on the 30th and 31st, when stormy weather prevailed in Upper India, but had not extended to Behar and

Bengal, the maximum temperature was considerably below the normal in Upper India (the deficiency being most marked at the hill stations), and was much above the average in Bengal, Behar, and the greater part of the North-Western Provinces. In the hill districts the maximum temperature was lowest on the last day of the storm and rapidly increased during the next few days, so that at Simla on the 5th, when the snow was nearly all melted except in sheltered spots, the maximum was slightly above the average. The most important fact is that the lowest day temperatures in the plains were not recorded during the passage of the cloudy weather of the storm, but on the first two days of cloudless skies and fine dry weather which followed the storm. The greatest depression of day temperature occurred at Lahore and Roorkee on the 2nd, at Lucknow on the 3rd, at Burdwan and Calcutta on the 4th and 5th. This transmission of the cold wave corresponds to the rate of transmission of the storm itself, which roughly averaged from 250 to 300 miles per diem, or 10 to 12 miles an hour.

The two following tables give similar data for minimum temperature. (The data are of the night preceding 8 A. M. of the day named.)

Station.	Minimum temperature of night preceding 8 A. M. of						
	Jan'y. 30th.	Jan'y. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	26·7°	23·7°	25·7°	25·7°	34·7°	36·7°	34·7°
Simla. ...	24·0°	21·0°	26·2°	26·0°	31·4°	38·5°	38·5°
Lahore ...	42·1°	39·6°	42·1°	37·2°	36·2°	38·7°	41·6°
Roorkee ...	43·1°	41·1°	44·1°	41·5°	42·0°	43·1°	50·3°
Lucknow ...	56·9°	48·0°	47·0°	50·5°	46·0°	42·0°	44·0°
Patna ...	59·8°	52·9°	47·9°	49·9°	48·9°	43·8°	48·9°
Burdwan ...	62·4°	61·4°	53·3°	51·3°	43·2°	43·2°	51·3°
Calcutta ...	61·8°	61·3°	52·3°	52·3°	58·8°	53·3°	49·8°

Station.	Variation of minimum temperature of date from the normal.						
	Jan'y. 30th.	Jan'y. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	-6·5°	-9·0°	-6·8°	-6·4°	+2·6°	+4·1°	+1·6°
Simla ...	-9·7	-13·1°	-8·2°	-8·8°	-3·8°	+2·9°	+3·1°
Lahore ...	-0·2	-3·2°	-1·0°	-5·5°	-6·4°	-4·0°	-0·8°
Roorkee ...	-0·3°	-2·9°	-0·7°	-3·7°	-3·6°	-2·6°	+4·7°
Lucknow ...	+10·8°	+1·8°	+0·4°	-3·5°	-1·2°	-5·4°	-3·6°
Patna ...	+10·3°	+3·9°	-1·1°	+0·5°	-0·8°	-5·9°	-1·0°
Burdwan ...	+7·7°	+6·8°	-1·1°	-3·4°	-11·7°	-12·0°	-4·1°
Calcutta ...	+6·2°	+5·8°	-3·2°	-3·6°	+2·3°	-3·7	-7·6°

These figures shew that the minimum temperature was greatly below the normal at the hill stations during the storm and largely above it in the plains on the 30th and in Bengal on the 30th and 31st, the excess being greatest in the North-Western Provinces. The night temperature slowly and steadily rose at the hill station from the 31st to the 5th, when it was above the normal. It was lowest in the Punjab on the 2nd and 3rd, in the N.-W. Provinces on the 3rd and 4th, and in Behar on the 4th and 5th, and in Bengal on the 5th. These facts are most easily summarized by the statement that a wave of cold was transmitted eastwards across Northern India at the rate of about 300 to 400 miles per diem.

The humidity data of the same stations for the same period are even more interesting and instructive. The first of the two following tables gives the humidity at 8 A. M. and the second the aqueous vapour pressure at the stations named. The third table gives the amount of cloud at the same hour and illustrates the rapid and complete clearing of the skies which follows the cold weather storms of Northern India.

Station.	Humidity at 8 A. M.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	98	100	99	83	84	26	35
Simla ...	28	31	13	47	42	58	27
Lahore ...	93	90	94	94	92	78	68
Roorkee ...	94	79	86	90	94	90	90
Lucknow ...	85	95	78	62	81	63	100
Patna ...	91	99	90	85	83	51	89
Burdwan ...	83	84	82	62	73	59	67
Calcutta ...	87	89	94	69	69	55	72

Station.	Vapour tension at 8 A. M.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	·162	·159	·146	·139	·149	·069	·099
Simla ...	·049	·043	·017	·087	·067	·148	·072
Lahore ...	·335	·281	·276	·276	·245	·197	·219
Roorkee ...	·391	·261	·242	·281	·265	·259	·270
Lucknow ...	·486	·488	·316	·257	·322	·228	·300
Patna ...	·275	·525	·403	·308	·354	·237	·378
Burdwan ...	·505	·524	·480	·289	·354	·302	·299
Calcutta ...	·552	·642	·549	·357	·342	·309	·343

Station.	Cloud proportion at 8 A. M.						
	Jany. 30th.	Jany. 31st.	Feby. 1st.	Feby. 2nd.	Feby. 3rd.	Feby. 4th.	Feby. 5th.
Murree ...	10	10	10	4	0	10	8
Simla ...	10	1	2	9	0	0	0
Lahore ...	10	0	0	10	0	0	0
Roorkee ...	10	0	3	2	0	0	0
Lucknow ...	7	8	0	0	3	0	0
Patna ...	10	10	0	0	9	0	0
Burdwan ...	5	8	0	0	0	0	0
Calcutta ...	0	0	0	0	0	7	0

The second table shews that the amount of aqueous vapour pressure in the air was greatest in the Punjab on the 30th and in the Gangetic plain on the 31st. A large decrease occurred on the 1st in the Punjab, on the 2nd in the Gangetic plain, and the decrease continued until the end of the period in Bengal. The lowest aqueous vapour pressure was registered in the North-Western Provinces on the 4th and in Bengal on the 5th, and the amount of vapour was only from one-half to one-third of that present in the air on the 31st. This very great change accompanied the extension of west and north-west winds across the Gangetic Valley into Bengal.

Two more remarkable illustrations might be given from the meteorology of recent years of the remarkable weather changes which occur in the rear of cold weather storms in Northern India and follow their disappearance (*viz.*, the periods February 1st to 6th, 1886 and February 5th to 12th, 1887). The last week of January or first week of February is, in at least two years out of three, one of stormy weather in the hill districts, and some of the most severe snow-storms of recent years have occurred during that fortnight. The second of these two periods, *viz.*, February 5th to 12th, 1887 is selected in further illustration of the peculiar features of the fine weather immediately succeeding severe stormy weather in Northern India and the Himalayan region.

The disturbance which gave this stormy weather first appeared as a depression in the South-west Punjab on the 27th of January. It intensified on the 28th and moved eastwards. It passed into the Himalayan region of the North-Western Provinces on the 29th and 30th. Heavy snow fell in the North-West Himalayas and Afghan highlands at this time, and extended eastwards to the Eastern or Assam Himalayas. Stormy and cloudy weather with much snow continued over the whole Upper Himalayan region until the 7th, when the weather suddenly cleared

up, and fine bright clear and cool weather prevailed for some days over the whole of Northern India.

The following tables give data of the temperature, humidity, and other meteorological conditions of the period.

Maximum temperature.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	37·6°	43·3°	40·8°	44·9°	41·0°	42·7°	40·5°
Rawalpindi ...	60·1°	69·2°	61·3°	63·5°	60·1°	64·1°	64·1°
Lahore ...	66·5°	67·0°	66·5°	68·5°	69·5°	68·0°	71·1°
Agra ...	73·9°	71·1°	70·1°	70·1°	72·4°	77·2°	79·7°
Allahabad ...	79·8°	73·8°	70·3°	68·8°	70·9°	74·0°	78·7°
Patna ...	77·8°	75·8°	71·7°	69·2°	70·6°	72·3°	76·3°
Calcutta ...	82·1°	82·5°	78·0°	72·5°	72·5°	72·8°	76·5°
Dacca ...	82·1°	82·7°	81·1°	77·6°	77·0°	74·4°	75·9°

Minimum temperature.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	25·5°	27·1°	28·6°	30·7°	29·3°	32·4°	29·7°
Rawalpindi ...	29·4°	32·9°	28·7°	33·4°	45·0°	42·0°	39·4°
Lahore ...	32·2°	31·7°	31·2°	34·2°	41·5°	46·0°	40·6°
Agra ...	46·6°	38·7°	36·7°	31·7°	41·6°	48·6°	49·2°
Allahabad ...	44·7°	41·6°	39·1°	39·6°	39·6°	41·7°	52·5°
Patna ...	50·9°	47·9°	44·7°	45·4°	43·8°	46·9°	53·4°
Calcutta ...	68·7°	59·3°	57·3°	52·8°	47·7°	47·7°	51·8°
Dacca ...	59·5°	55·2°	53·3°	49·1°	46·6°	45·5°	50·0°

Diurnal range of Temperature.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	12·1°	15·2°	12·2°	14·2°	11·7°	10·3°	10·8°
Rawalpindi ...	30·7°	36·3°	32·6°	30·1°	12·1°	22·1°	24·7°
Lahore ...	34·3°	35·3°	35·3°	34·3°	28·6°	22·0°	30·5°
Agra ...	27·0°	32·4°	32·3°	29·8°	30·8°	28·6°	30·5°
Allahabad ...	33·1°	31·6°	31·2°	29·2°	31·3°	32·3°	26·2°
Patna ...	26·9°	27·9°	29·8°	23·8°	26·8°	25·4°	22·9°
Calcutta ...	13·4°	23·2°	20·7°	24·8°	24·8°	25·1°	22·7°
Dacca ...	22·6°	27·5°	29·8°	28·5°	30·4°	28·9°	25·9°

Humidity at 10 hours.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	82	55	50	61	79	80	57
Rawalpindi ...	37	30	44	61	48	55	47
Lahore ...	33	33	24	28	28	41	34
Agra ...	33	32	28	29	25	36	39
Allahabad ...	44	38	27	31	32	24	35
Patna ...	45	54	41	38	42	43	47
Calcutta ...	85	33	32	26	34	36	53
Dacca ...	90	33	28	22	46	42	53

Aqueous vapour pressure at 10 hours.

Station.	February 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	·168	·109	·126	·154	·169	·196	·148
Rawalpindi ..	·146	·116	·163	·173	·226	·211	·230
Lahore ...	·140	·135	·105	·146	·169	·235	·209
Agra ...	·183	·155	·142	·150	·145	·237	·259
Allahabad ...	·238	·158	·136	·174	·189	·174	·252
Patna ...	·308	·296	·225	·214	·238	·277	·332
Calcutta ...	·680	·261	·208	·168	·208	·237	·377
Dacca ...	·648	·289	·217	·134	·292	·295	·396

Station.	Amount of wind during 24 hours ending 4 P. M. February, 1887.						
	7th.	8th.	9th.	10th.	11th.	12th.	13th.
Murree ...	167	117	170	117	267	206	200
Rawalpindi ...	115	155	79	56	68	53	117
Lahore ...	50	66	75	56	42	35	95
Agra ...	92	36	85	121	59	65	77
Allahabad ...	85	43	114	108	47	97	144
Patna ...	43	62	88	93	50	66	76
Calcutta ...	94	85	126	125	80	125	77
Dacca ...	34	63	99	126	62	67	40

The following gives a brief summary of the chief conclusions from the data of this period:—

- 1st.—The lowest day temperatures were recorded at Murree and the hill stations just before the storm disappeared and at the

plain stations during the fine clear weather which followed the storm. The lowest maximum temperatures were observed in the Punjab on the 9th and in East Bengal on the 12th. This may be summed up by assuming the eastward passage of a cold wave along the plains of Northern India.

2nd.—The lowest night temperatures of the period were registered in the hills on the 6th and 7th during the storm, and in the plains during the fine clear weather which followed in the rear of the storm. Thus the lowest minimum temperatures occurred in the Punjab on the 9th, in the North-Western Provinces on the 9th and 10th, in Behar on the 10th and 11th and in Bengal on the 11th and 12th. This further proves the passage of a wave of cold eastwards along the length of the plains of Northern India, at a rate of about 300 miles per diem.

3rd.—The period immediately following the breaking up of the storm was one of large diurnal range of temperature. The effect of the dry weather which followed in increasing the daily range was shewn most strikingly in Bengal. The daily range at Calcutta increased from 13.4° on the 7th to 25.1° on the 12th and at Dacca from 22.6° on the 7th to 30.4° on the 11th.

4th.—There was a large temporary increase in the air motion, which was first shewn at the western stations and extended eastwards. It occurred at the Bengal stations two or three days later than in the Punjab and Western districts of the North-Western Provinces. These winds were the cool westerly winds which followed in the rear of the storm and accompanied the setting in of fine clear dry weather.

5th.—The most important change was in the amount of vapour and the humidity of the atmosphere. This was far more marked in Bengal than in the Gangetic area. In Bengal local damp sea winds prevailed during the existence of the cold weather storm, and after it disappeared they were replaced by dry land westerly winds. The humidity at Calcutta decreased from 85 to 33 and at Dacca from 90 to 33 in 24 hours. The aqueous vapour pressure data shew that this was due to a large reduction in the amount of vapour pressure and hence to the displacement of the previous winds by an air current of opposite characteristics. The amount of vapour in the air at Calcutta on the 10th was less than a fourth of that present in it on the 7th.

The following hence gives the chief features of the anti-cyclonic weather immediately following a cold weather storm during which heavy general snow has fallen in the Afghan highlands and the Himalayas :—

- (a.)—Pressure is excessive in Upper India and unusually clear bright fine weather prevails. Strong westerly winds set in over Upper India and extend rapidly eastwards. In Bengal these winds displace the light southerly or easterly winds which prevailed during the previous disturbed weather.
- (b.)—During the stormy weather both day and night temperatures are very low at the hill stations, but, with the melting of the snow, temperature rapidly increases and the ordinary anti-cyclonic conditions of increased temperature are again exhibited at these stations. The important factor in determining this change of temperature conditions appears to be the melting of the snow from all the lower elevations.
- (c.)—During the disturbed weather the day temperature in Upper India is below the normal and the night temperature is above it. In Bengal and Behar, in consequence of the prevalence of light southerly and easterly winds, both day and night temperatures are considerably above the normal and the weather sultry and oppressive. The disappearance of the disturbance is usually followed by a rapid reduction of both the day and night temperatures. This accompanies a complete shift of wind from some southerly to some northerly direction and the prevalence of unusually clear bright skies in which the solar radiation is even greater than usual. This passage of a wave of cold is hence evidently due to the intrusion of a body of cold air advancing from Upper India or the Himalayan mountain region into the Gangetic plain and Bengal.
- (d.)—The setting in of these winds produces a very rapid reduction in the humidity of the air and the amount of vapour. The reduction is far greater in Bengal than in the interior, and is sometimes excessive.
- (e.)—In consequence of these large changes of humidity and temperature, the periods immediately following cold weather storms in Upper India are especially cool, pleasant, and bracing in Bengal and stand in marked contrast to the weather prevailing before and during the existence of the storms.

We proceed to give an explanation of these facts.

The chief feature of the cold weather in Upper India is great stillness of the air, the stillness being most marked at night.

The following table gives the amount of winds measured by the

self registering anemographs during the month of January 1889, and illustrates this feature of the air motion.

The following table gives the amount of wind during the day and night hours

Date.	Roorkee.		Lucknow.	
	Amount of wind in miles.		Amount of wind in miles.	
	6 A.M.—6 P.M.	6 P.M.—6 A.M.	6 A.M.—6 P.M.	6 P.M.—6 A.M.
1st January 1889.	32	3	60	24
2nd	1	0	31	24
3rd	33	0	15	12
4th	20	0	13	11
5th	2	2	12	6
6th	12	2	43	39
7th	30	10	49	28
8th	14	6	53	24
9th	14	7	30	2
10th	55	13	4	2
11th	20	0	5	1
12th	1	17	17	16
13th	44	0	41	5
14th	2	0	3	6
15th	0	2	13	9
16th	2	2	45	17
17th	5	4	33	13
18th	4	10	41	42
19th	39	18	100	47
20th	29	3	103	48
21st	4	0	26	17
22nd	18	21	40	11
23rd	29	0	14	15
24th	13	4	6	2
25th	19	0	23	6
26th	6	2	4	0
27th	6	4	4	3
28th	1	34	10	8
29th	57	153	102	100
30th	63	25	155	25
31st	26	1	57	11

Average of period

from 1st to 27th.

17 miles.

4.5 miles.

31 miles.

16 miles.

These figures shew very clearly the quiescent state of the atmosphere in Northern India during the cold weather and more especially at night. This is especially observable in the periods of ordinary anti-cyclonic conditions.

In fine clear weather the range of temperature is large. It averages 27° for the whole of the Punjab for the month, and in fine clear weather usually varies little from 36°F. or 20°C. The range at the hill stations is much less, averaging 15° and rarely exceeding 18° , even in

clear weather. It is not necessary to give data for these statements, as a reference to the Tables I to IV will confirm them. We shall therefore assume these two figures, *viz.*, 18° and 36° , as representing approximately the daily ranges of temperature of the air at the hill stations and adjacent plains in Upper India in ordinary fine clear anti-cyclonic weather in January. If there were absolutely no motion of the air, vertical or horizontal, an increase of temperature of 36° of the lowest strata of air over the plains would cause pressure, as measured by the barometer, to increase about two inches. No such increase actually occurs. The only large barometric movement in such weather is the diurnal oscillation (slightly exceeding in amount a tenth of an inch), which goes on with great regularity. Again, as no such large increase of pressure occurs, it is evident that it is counterbalanced by the subsequent changes of pressure due to air motion of expansion, convection currents and horizontal movement. The cooling of the air takes place most rapidly for some hours after sunset when the air movement is apparently least. The adjustment of pressure to the changing temperature conditions during night is frequently not accompanied by any perceptible or measurable air movement (*vide* data of Table, p. 41). The slightest observation of the way in which the smoke of the evening fires in an Indian town in Upper India lies over it motionless indicates clearly that the only important air movement which occurs in the evening during the rapid cooling of the air, can only be one of compression due to descent of the air above the lowest stratum, and that this is so extremely slow a process as to be imperceptible even by its action on mist and smoke. Considering the first 1000 feet thickness of the atmosphere to be homogeneous, the upper surface would have to descend about 60 feet in order to produce the compression required to maintain pressure at the same amount. This motion may appear to be considerable, but if it occurs as an accompaniment to the cooling it will take several hours to be completed. A total downward movement of the air at a height of 1000 feet through sixty or seventy feet spread over several hours is exceedingly small and cannot be detected by any of the ordinary methods of measuring air motion. The assumption of this slow motion of compression is hence in accordance with facts and competent to explain them. The cooling by night hence takes place in a nearly quiescent atmosphere, and if there be any convection currents, they are so feeble, more especially when compared with those which accompany heating during the day, as to be of no importance and negligible. Hence the motion of the air at night in Upper India during fine clear weather in January may be assumed to be a very small general downward movement producing the

amount of compression necessary to counterbalance almost exactly the effect of diminishing temperature on the pressure. In the open Gange-tic plain, more especially near the hills, it may be accompanied by slight horizontal movements, but they are generally too small to be measured by an anemometer. Hence the adjustment of pressure takes place in the cold weather during the day time chiefly by convection currents and partly by expansional movement of the lower strata and partly by horizontal motion from west to east or from the area of later to earlier solar action during the day; and during the night, almost solely by vertical movement accompanying or producing compression.

Through such a nearly motionless atmosphere the heat radiated from the earth's surface will pass readily. The chief proportion of the small absorption which occurs will be in the lowest strata. Hence the upper strata which receive little heat and give out little by radiation will have their temperature very slightly affected by this cause. Also if the compression of the lower strata be effected by the expansion of the upper strata, these strata will be slightly cooled, whilst the compression of the lower strata will cause a slight increase of temperature, but these changes can be shown to be so small as not to affect the temperature at the utmost more than 1° or 2° . The most important action, however, occurs in the lowest strata. The earth is cooled rapidly by radiation from its surface into space, and in the vast level plains of Northern India, the air remains quiescent or stagnant over it and hence cools down rapidly. (The cooling of the lowest strata probably takes place chiefly by conduction and to some extent by convection currents extending to a comparatively small height, determined partly by height of vegetation, trees, houses, &c.) The chief fact, however, remains that the cooling occurs in a stagnant or quiescent stratum near the earth's surface, and hence goes on continuously during the night, and produces a very large accumulated decrease of temperature.

This action is, however, chiefly confined to the lowest strata and above these the fall of temperature will be almost solely due to conduction (a slow process in air) and hence be small in amount. Also, as the lower strata are compressed and the upper strata expand, there will be some level at which at each instant there is neither compression nor expansion. Whether this will alter much in position during the night can only be conjectured, but it appears on the whole most probable that it will not. The total fall of temperature during the night will hence decrease rapidly in amount with elevation and at some elevation become practically constant where it will be due almost entirely to slight cooling by radiation and by expansion and to a very slight extent by conduction and probably not exceed 2° or 3° in amount.

In the preceding discussion it has been shewn that the temperature conditions and changes at the hill stations are usually different from those of the plain stations. For example, ordinary anti-cyclonic weather gives increased day and night temperature at the hill stations, and hence increases the mean temperature and only affects the diurnal range very slightly, whilst in the plains it gives increased day and decreased night temperature, and hence increases very largely the diurnal range of temperature, whilst it only slightly affects the mean daily temperature. Again stormy weather in the mountain districts of Northern India gives decreased day and night temperature and hence a much lower mean temperature than usual with little change in the diurnal range of temperature. The same weather in the plains gives decreased day and increased night temperature, and hence the diurnal range of temperature is largely diminished, whilst the mean temperature is very slightly affected. Hence the important conclusions,

1st.—That the chief weather changes and conditions in Northern India during the cold weather affect the temperature in entirely different ways in the plains and hills. In the former they modify the diurnal range of temperature chiefly and in the latter the daily mean temperature.

2nd.—That the monthly means of temperature or of daily range of temperature are in consequence not comparable for the hills and plain stations, and that similar variations from the normal imply different conditions and actions in the two cases.

3rd.—Hence the nature and causes of these changes and variations of the vertical temperature relations cannot be properly estimated and investigated by comparing monthly means, but by comparison of the actual temperature conditions prevailing in each particular state or type of weather.

Hence typical cases have been selected in the previous portion of the paper and the same principle is adopted throughout.

We are now in a position to give a simple explanation of the high night temperatures at the hill stations observed during fine clear weather in December and January.

In ordinary anti-cyclonic weather in January in the Punjab plains the temperature ranges from an average maximum of 72° to an average minimum of 36° , giving thus a mean diurnal range at such periods of 36° . The hill stations in Upper India are at an elevation of about 7000 feet above the sea or 6000 feet higher than the neighbouring plain stations. The rapid increase of temperature in the plains during the morning gives rise almost entirely to convection currents. As the air is very dry, it may be assumed that in rising and expanding it will cool

and diminish in temperature at a rate not much less than that of a rapidly ascending current of dry air, which is very approximately 1° for every 193 feet. Assuming the rate of decrease of temperature in these ascending currents to be 1° for every 200 feet, the motion of the atmosphere would tend to give a temperature of ($72^{\circ}-30^{\circ}$ or) 42° at the elevation of 6000 feet above the plains of the Punjab. Little or no change would occur at night, when there are practically no convection currents, and hence at that elevation above the plains of Northern India the temperature in such periods would remain permanently at about 42° and hence be about 6° higher than the average night or minimum temperature at the level of the plains below.

The day temperature at the hill stations would be considerably higher than 42° in consequence of the heating of the air by contact with the land surface, and average about 60° in such weather. About sunset temperature would fall quickly and a short period of rapid decrease of temperature would occur until the temperature reached that of the same level above the plains, *viz.*, 42° . The continuous decrease of temperature in the hills and plains for some time after sunset would evidently give rise to a compressive movement over the hills and plains and also to a very slow downward movement of air from the hills towards the plains and to a nearly horizontal upper movement from above the plains towards the hills. Hence the air which cools by contact with the mountain sides and moves down towards the plains is replaced from a large source (that of the whole mass above the plains at the higher levels), and hence arrives at a nearly constant temperature corresponding to that level. Thus air brought in from the level of 7000 feet would arrive during the night at that level in the hills at a nearly constant temperature at 42° , and hence when the temperature at the hill stations has fallen to a little below 42° it would remain fairly steady during the night at about that temperature.* As the tempera-

* In order to verify this statement I had two series of temperature observations taken in a suitable open position on the top of a ridge at Simla on the nights of the 9th and 11th of December last, when ordinary anticyclonic weather prevailed in Northern India. They are given in the following table and it will be seen fully to confirm the conclusion given in the text.

Date.	Temperature of the air.													Min. temp. during night.
	16 hr s	16-30 hrs.	17 hrs.	17-30 hrs.	18 hrs.	18-30 hrs.	19 hrs.	19-30 hrs.	20 hrs.	20-30 hrs.	21 hrs.	21-30 hrs.	22 hrs.	
December 9th	54.9	52.4	49.2	47.7	45.4	46.6	46.9	46.6	46.7	44.9	43.2	45.6	45.9	41.0
„ 11th	50.7	48.5	43.9	43.8	42.0	42.2	42.7	43.1	42.6	43.3	43.6	44.9	45.2	41.2

ture at the level of the plains would probably fall to about 36° on such clear nights, the minimum temperature in the plains would hence be slightly below that at the hill stations 6000 feet above.

The previous supposition gives an average case, and shews that in ordinary anti-cyclonic weather in December and January the minimum temperature at the hill stations tends to be higher than at the plain stations.

The following are specific examples taken from the observations of the inversion of the vertical temperature relations was most marked:—

On the 2nd the maximum temperature at Rawalpindi was 70.5° . The corresponding temperature of convection at the level of Murree 4800 feet higher would be $(70.5-24^{\circ})$ or 46.5° . The minimum temperature on the night of the 2nd was 49.3° or slightly greater. On the 3rd, the maximum at Rawalpindi was 68.9° and the convection temperature at the level of Murree 44.9° , which was practically identical with the actual minimum at Murree 44.6° . The minimum temperatures on these two nights at Rawalpindi were 37.4° and 36.9° or 11.9° and 7.7° lower than at Murree. Again at Ludhiana on the 3rd the maximum was 77.7 and at the level of Simla 6200 feet high the corresponding convective temperature would be $(77.7-31^{\circ})$ or 46.7° . The minimum at Simla on the night of the 3rd was 48.4° and 2.8° higher than at Ludhiana. At Roorkee on the same day the maximum was 72.3° and the corresponding convective temperature at the level of Mussooree (6000 feet higher) was 42.3° . The minimum at Mussooree was actually 42.0° and 5.7° higher than at Roorkee. It is not necessary to multiply examples, as these shew roughly that the minimum temperatures at the hill stations and therefore the temperature *during the greater part of the evening and night* is practically that of dry air at the level of the hill station rising rapidly with the maximum day temperature at the level of the plains or what may be termed the convective temperatures corresponding to the maximum temperature conditions of the lowest stratum.

Hence the explanation and facts appear to establish the following:—

(a)—In ordinary anti-cyclonic weather when the horizontal air motion by day or night is very small, the temperature at

With these figures may be compared the following temperature observations recorded at Lahore on the same days.

Date.	Temperature of the air at					Maximum temperature during day.	Minimum temperature during night.
	4 hrs.	8 hrs.	10 hrs.	16 hrs.	22 hrs.		
December 9th ...	40.5	47.5	66.0	76.2	50.0	74.2	38.9
„ 11th ...	41.0	46.0	66.0	72.5	48.6	75.2	39.4

considerable elevations above the plains is nearly constant, and is determined by the temperature at that elevation of the rapid upward convective currents at the hottest period of the day.

- (b)—There is at such periods a slow steady descent of air during the night from the hills towards the plains and a horizontal inflow from higher levels of air at nearly constant temperature to the hills.
- (c)—Temperature decreases very rapidly at the hill stations shortly before and for some little time after sunset until the temperature falls to or slightly below that of the same level in the open atmosphere over the plains of Northern India, after which it remains nearly constant throughout the night. The short chilly period immediately after sunset is a very characteristic feature of the hill stations in ordinary fine weather during November, December, and January.
- (d.)—The temperature of the earth's surface in the plains of Northern India falls rapidly and steadily during the whole night and until very shortly before sunrise. Hence also the temperature of the quiescent mass of air immediately above it falls *pari passu*, and by amounts ranging from 30° to 40° in ordinary clear weather in January. The fall of temperature is greatest at a considerable distance from the foot of the hills, where the observations shew that the maximum temperatures are higher, the daily range of temperature greater, and the minimum frequently lower than immediately under the hills. The following gives examples for the 2nd and 3rd January, 1889. The stations which were to be compared are grouped by means of brackets.

Station.	2nd			3rd		
	Max.	Min.	Range.	Max.	Min.	Range.
Ludhiana }	69·7	41·0	28·7	75·2	45·6	29·6
Lahore }	72·0	36·2	35·8	73·0	37·2	35·8
Roorkee }	70·8	38·9	31·9	70·8	36·6	34·2
Meerut }	72·7	42·1	30·6	74·2	39·0	35·2
Delhi }	73·1	41·1	32·0	78·1	40·1	38·0
Bareilly }	73·7	41·3	32·4	71·2	39·8	31·4
Agra }	75·6	44·6	31·0	78·6	43·6	35·0
Gorakhpur }	68·9	45·4	23·5	71·8	47·9	23·9
Lucknow }	75·2	43·0	32·2	71·1	41·1	30·0
Allahabad }	71·4	43·7	27·7	77·0	42·7	34·3

As there is little or no difference, so far as can be judged, in the radiating power of the earth's surface at Ludhiana, Roorkee, Bareilly, and Gorakhpur as compared with Lahore, Delhi, Agra, and Allahabad in January to account for the greater cooling of the earth's surface and the superincumbent air, it is almost certain that the mass of air descending from the hills is warmed by the action of compression in descending, and that this is one, if not the chief, factor in giving a smaller fall of temperature and slightly increased night temperature at the stations nearest to the hills when compared with the more distant ones. Hence it is clear that the descending air does not contribute towards the cooling of the plains of Northern India during the night but actually tends to diminish it.

The efficient factors in the rapid cooling of the air in the plains of Northern India at such periods are :—

1st.—Absence of cloud and other conditions favouring rapid radiation from the earth's surface.

2nd.—Absence of air motion, and more especially of downward convection currents, so that the same mass of air remains in contact with the earth's surface.

The first ensures the rapid cooling of the earth's surface and the second of the air immediately above the earth's surface.

A brief explanation will serve for the temperature conditions in Upper India during and after stormy weather. The most important factor appears to be snow fall in the hills and rain in the plain districts. The condensation takes place largely, if not almost entirely, in the upper return current of the north-east monsoon circulation and hence at a great elevation. The falling rain and snow carry down with them the temperature of their place of origin and hence tend to cool considerably the whole mass of air through which they fall. The amount of the cooling will evidently depend greatly upon the amount and period of the rain and snowfall. In the hill districts, the temperature falls steadily throughout a long snow storm, and the lowest temperatures are usually recorded just before the weather begins to clear. In the plains, the day temperature falls in consequence of cloud and rainfall and the action of rainfall referred to above. But the cloud canopy causes terrestrial radiation to proceed very slowly at night. The effect of the cloud in diminishing radiation is so large that the night temperatures are hence at such periods considerably higher than usual. Hence stormy weather in January and February depresses temperature largely throughout the whole day at the hill stations, and in fact tends to give them a temperature nearly equal to the permanent temperatures of a stratum considerably above their level (*i. e.* of the stratum in which condensation occurs). Whereas in the plains the chief

effect is to diminish the daily range of temperature by decreasing the day and increasing the night temperature.

Finally, when the stormy weather passes away unusually dry clear weather sets in. In the hills the snow probably extends down to a level of 4,000 or 5,000 feet. The temperature of the air at and above that level is mainly determined by that of the snow surface with which it is in contact, and hence, even in the middle of the day, differs little from 32° . Hence a period of low and nearly constant temperature conditions sets in until the snow is melted and the snow line retreats. The snow melts very rapidly, at a rate of six to nine inches *per diem* in clear weather in exposed positions, and a snow fall of 3 or 4 feet will melt away and disappear in five or six days in favourable weather except in sheltered positions. Consequently, temperature in the hills at such periods is at first low, but rapidly rises with the melting of the snow, and after a few days of fine clear weather the conditions merge into those of normal ordinary anticyclonic weather, which have been already stated.

In the plains the conditions and actions are different. Solar radiation during such periods is more active than usual in consequence of the great clearness of the atmosphere, the absence of dust, &c. Hence not only is the upward convective motion over the plains during the day greater than usual, but in consequence of the low temperature over the snow-covered surface of the hills there is a rapid flow of air from the hills towards the plains, which in consequence of the first action is probably greater by day than by night. This mass of air starting from, say, a level of 4000 feet above the plains at a temperature of 32° will by rapid descent be heated about 20° and hence will arrive at the level of the plains at a temperature of about $32^{\circ} + 20^{\circ} = 52^{\circ}$, or 20° lower than the maximum temperature prevailing in the plains in ordinary anticyclonic weather. Hence there will be a steady flow of cool air towards the plains from the hills, the temperature of which, when it arrives at the level of the plains, will be very low when compared with the ordinary day temperature at the period. As the snow melts and the snow line ascends, the temperature of the descending current at the level of the plains will increase. Hence in the plains immediately after a severe storm in the hills there will be,

- 1st. A strong and steady current from the hills towards the plains and hence a strong easterly current from the north north-west and west down the Gangetic Plain.
- 2nd. This current will be fed from a source of nearly constant temperature above the elevation of the snowline, and hence the temperature of the descending current at the base of the hills will be least immediately after the clearing up

of the weather, and will increase slowly with the melting of the snow in the hills. Hence one of the most striking features is the low maximum temperatures recorded at such periods in Upper or Northern India, although the air is unusually clear, and the solar radiation at the earth's surface more intense than usual.

3rd. One of the chief features of a descending current is great dryness, hence the descending currents from the hills at such times will tend to give abnormally low humidity to the whole area over which their influence extends. The change of humidity due to this will evidently be greatest in the area over which damp sea winds previously prevailed, that is, usually in Bengal.

It will thus be seen that the features of the very cool and dry periods after stormy weather in Northern India during January and February are explicable on the assumption of unusually large and massive currents from the hills at a time when the snow surface has greatly extended downwards.

It is hardly necessary to point out that these cool periods are of occasional occurrence in Bengal, and are the most characteristic and pleasant feature of the cold weather. These cool periods in Northern India hence shew most strikingly the rapid and large influence which snowfall over a large mountain area exerts. Mr. Blanford and myself have shewn the probably large influence it occasionally exercises on the distribution of the south-west monsoon rainfall. This has been questioned by some writers as the effect appears to them to be disproportionate to the cause. The large changes in air motion, temperature, and humidity over the whole of Northern India which follow general snowfall in the hills, and which continue for longer or shorter periods according to the intensity and extent of the storm, are a frequent strong argument in its favour.

II.—*Natural History Notes from H. M.'s Indian Marine Survey Steamer 'Investigator,' Commander ALFRED CARPENTER, R. N., D. S. O., commanding.*—No. 14. *Observations on the Gestation of some Sharks and Rays.*—By ALFRED ALCOCK, M. B., Surgeon-Naturalist to the Marine Survey.

[Received November 18th, 1889;—Read January 1st, 1890.]

(With Plate I.)

The observations which I have to record were, of necessity, made so hurriedly that I can only hope them to be regarded as a gleanings in the outskirts of the field of bionomic science. But any one who, single-handed, and almost without appliances, has been called upon, at a moment's notice, to undertake the examination of large dead animal bodies in the plains of tropical India will readily realize the difficulties which hinder the exact and exhaustive dissection, under similar conditions, of huge fishes, on board ship, in the Bay of Bengal. And I trust that the drawbacks alluded to will be taken into consideration with the unfinished appearance of the work.

§ 1. *Observations on the Gestation of Carcharias melanopterus, Zygaena blochii, and Carcharias dussumieri.*

a. CARCHARIAS MELANOPTERUS. A female, five feet long, was captured by Mr. W. H. W. Searle, of the 'Investigator,' on the Orissa coast, off the entrance to the Chilka Lake, on the 21st January, 1889. The abdomen was much distended; and, on opening it, the distal ends of the oviducts were found to form, on each side, an enormously dilated uterus, each occupying the whole length of the abdominal cavity on its own side.

On section, the walls of the uteri were found to be hyperæmic, rather hypertrophied, and spongy: their cavities were divided off, each into three separate longitudinal compartments: and tightly-packed in each compartment, lying head forwards, parallel with the antero-posterior axis of the mother, was a young one twelve inches long. Each young one was, further, completely enveloped in a very delicate membrane, on removal of which the placental-cord was found to be extended, in a semi-spiral curve, from a point midway between the pectoral fins of the foetus to its maternal attachment at the hinder end of the uterus.

Each placental cord, which is about eighteen inches long, and one-sixth of an inch in diameter, is seen to divide, near the maternal attachment, into two equal branches, each of which subdivides again and again to form a compact arborescent mass, which is closely applied to a flat vascular disk on the wall of the uterus, and thus the placenta

is formed. The maternal attachment of each placental cord is separate and distinct.

At the foetal end, the cord, having pierced the ventral wall between the pectoral fins of the foetus, divides into two branches. The lower of these, which is the artery, can be traced into the mesentery, where, at the level of the proximal end of the large intestine, it is found to be furnished with a pouch-like gland: its connexion with the dorsal aorta could not be made out. The upper branch (venous) subdivides into two branches, which ascend in the median fissure of the liver to the portal vein.

A transverse section of the placental cord shews one artery and one vein.

A transverse section through the wall of the uterus shows an outer, thin, compact layer of muscular and connective tissue; but the greater part of the section consists of an indefinite spongy network (venous?), with numerous large thick-walled arteries.

The red blood cells of the foetus are $\frac{1}{1450}$ of an inch long, and $\frac{1}{3350}$ of an inch broad.

b. *ZYGAEUA BLOCHII*. On the same occasion, a female of this species, nearly five feet long, was taken. The general appearances were similar to the appearances in *Carcharias melanopterus*; but each uterus contained five foetuses; and the placental cords, which were much more delicate, were uniformly covered, except at the extreme foetal end, with flattened, leaf-like, bilobed or trilobed appendicula, from one-eighth to one-quarter of an inch long, each lobe being about one-eighth of an inch broad.

A transverse section of a placental cord, which includes vertical sections of the peripheral appendicula, shows, in the cord, a single artery, a large vein, and four large irregular channels; and, in each of the appendicula, a central longitudinal vessel apparently opening into one of the channels of the cord.

A single intact appendiculum, examined under a moderate power, is seen to have a thick external epithelial investment, while internally the central vessel is seen to break up into a fine ramifying and anastomosing capillary-like plexus.

A transverse section of an appendiculum, under a high power, resolves the epithelium-like investment into a gland-like aggregation of round large-nucleated cells, about ten strata deep, beneath which is the loose-meshed connective tissue of the appendiculum which supports the ramifying branches of the contained vessel.

The structure of the placenta, and the ultimate distribution of the vessels of the cord, are the same as in *Carcharias melanopterus*, but there

is no gland-like body in connexion with the artery. The red blood-cells of the foetus are $\frac{1}{1300}$ of an inch in the major, and $\frac{1}{2800}$ of an inch in the transverse diameter.

The length of the foetuses was about fifteen inches.

The nature of the appendicula is difficult to understand, seeing that the foetus is connected with the mother by a large and well-developed placenta; but their richly cellular investment is evidence of some active function, either in the elaboration or purification of the blood proceeding to the foetus. If the channels of the cord are regarded as lymphatics, the appendicula might be looked upon as forming a diffused and primitive lymphatic gland-system, their thick investment of lymphoid cells being analogous to the medulla of a mammalian lymphatic gland.

c. *CARCHARIAS DUSSUMIERI*. A female, seven feet and a half long, was hooked at sea, off the west coast of Middle Andaman Island, on the 13th of April, 1889.

Immediately after death, lively movements commenced in the abdomen, which was much distended; and the abdominal cavity, on being opened, was found almost completely filled by the dilated, congested, spongy-walled uteri, as in the case of *Carcharias melanopterus* and *Zygæna blochii*. Each uterus contained five living foetuses, each two feet long, lying head forwards in separate compartments, each with its own placenta, exactly in the manner already described. The placental cords had the usual appearance.

The young ones when removed to a tub of sea-water swam about vigorously for nearly an hour, but died eventually from hemorrhage, due to rupture of the placental cord.

The structure of the placenta, and the distribution of the vessels of the cord, were exactly similar to those of *C. melanopterus*; but no gland-like organ was found on the artery.

Unfortunately, the selected specimens, though placed in strong alcohol, putrified.

The specimens of *Carcharias melanopterus* and *Zygæna blochii*, though packed in salt, became so rotten that they fell to pieces.

§ 2. Observations on the Gestation of *Trygon bleekeri*, and on the Uterus of *Myliobatis nieuhofti*.

a. *TRYGON BLEEKERI*. A female, with a disk of very large dimensions, was taken in the seine, by Mr. W. H. W. Searle, in False Point Harbour (Orissa coast), on the 15th December, 1888.

The distal end of the right oviduct was enormously dilated, and contained in its cavity a fully-developed male foetus with a disk $11\frac{3}{4}$ inches long and $10\frac{3}{4}$ inches broad.

The striking feature was, that there was no connexion of any kind between the fœtus and the mother, and no evidence of any such previous connexion.

The mucous membrane of the uterus, however, was covered with an abundant glairy albuminous fluid, the secretion apparently of a layer of thick-set papillæ which formed its inner coat; and the inference seems irresistible that this fluid constituted the nutriment of the fœtus, and was, in short, a true uterine milk. Unfortunately, the examination of the stomach of the fœtus was delayed for twenty-four hours, when the viscera had undergone such changes that the verification of this theory was hardly possible.

On removal of the fluid, which was then found to form a nearly solid coagulum on the application of heat, the papillary layer of the mucous membrane of the uterus was found to be of a vivid scarlet.

The papillæ themselves average about half an inch in length, and are filiform in shape, and very delicate. They are so thick-set as to be in contact when not floated out in water.

Beneath them is a thick mucous layer rich in blood-vessels, and outside this is (1) an inner circular and outer longitudinal layer of muscle, and (2) a connective-tissue coat; the whole aggregating in thickness one-eighth of an inch.

The thickness and compactness of the muscular coat is in striking contrast with the loose spongy nature of the uterine walls in *Carcharias* and *Zygæna*, and appears to indicate much greater parturient effort in *Trygon*.

b. *MYLIOBATIS NIEUHOFII*. A female, with a disk seventeen inches long and twenty-eight broad, was taken in the seine, by Mr. W. H. W. Searle, off Cocanada, on the 31st March, 1889.

The left ovary was full of large ova, and the distal end of its oviduct formed a large globular swelling, with thick, firm, muscular walls, and a uniform internal lining of broad flattened papillæ nearly half an inch long.

On the posterior surface of this uterus, and closely adherent to it, was an indistinctly lobulated gland-like organ, which, on section, was found to consist of an aggregation of tubules with blood-vessels and characteristic glomeruli, and a small amount of intertubular stroma. The tubules were lined with large-nucleated, cubical, epithelium. Unfortunately, the other relations of this kidney were missed.

A section through the uterus shows, from without inwards, (1) a compact connective-tissue investment about one-eightieth of an inch thick, with numerous large blood-vessels; (2) a layer of unstriped muscular tissue in transverse bundles; (3) a layer of similar muscular

tissue in longitudinal bundles, the united thickness of the two layers being about one-nineteenth of an inch; (4) a mucous layer of varying thickness, containing numerous blood-vessels and lymphatic (?) spaces, and crowded with lymphoid cells.

This mucous layer forms the long papillæ above mentioned, and a uniform sheet of close-set tubular glands, which resemble, for the most part, the lieberkuhnian follicles of human anatomy, covers its entire surface, both papillary and inter-papillary. These glands, at any rate near their orifices, are lined with short columnar epithelial cells, and similar cells invest the surface of the mucous membrane between the orifices of the glands.

The individual papillæ, as already stated, are about half an inch long, and are flattened. In some cases they bifurcate or trifurcate. In breadth they vary from one forty-eighth to one twenty-fourth of an inch. They are formed by a central prolongation of the mucous coat richly provided with lymphoid cells, and containing at least one blood-vessel and numerous lymphatic (?) spaces; and are invested externally by the above-described layer of tubular glands. These glands are mostly simple at the bases of the papillæ, but peripherally they frequently become racemose, and in this case the acini are lined internally with a cubical epithelium.

As to the function of this vast surface of glandular tissue, we are able to form an opinion by referring to the case of *Trygon bleekeri*. There we found a uterus exactly similar in its naked eye anatomy to the one we are discussing; and in this uterus was a large foetus entirely separate, as far as structural connexion goes, from the mother; while the uterine papillary surface was concealed by a copious secretion of a highly albuminous, and presumably nutritive, fluid. In the absence of any vascular connexion between the foetus and the mother, we assumed that this fluid served for the nutrition of the foetus.

In *Myliobatis nieuhoftii*, in which the uterine papillæ are less attenuated, and more amenable to manipulation, we find the whole intra-uterine mucous membrane forming a superficial gland; and I think we are justified in assuming that this gland is practically a milk-gland, the secretion of which furnishes the developing foetus with nutriment.

In the *Zoological Record* the only allusion to uterine villi that I can find is to a paper by Trois, in the "*Atti del Instituto Veneto*" Vol. II, p. 429, "On the uterine villi of *Myliobatis noctula* and *Centrina salvi-ani*;" but I regret that I have not been able to obtain access to this.

EXPLANATION OF PLATE I.

Fig. 1. A piece of the placental cord of *Zygæna blockii*, natural size.

Fig. 2. Transverse section through the same, showing artery and vein, lymphatic (?) spaces, and three appendicula in oblique section with parts of two more in vertical section. $\times 16$.

Fig. 3. A portion of one of the appendicula of the same, showing the ramifying vessel. $\times 21$.

Fig. 4. Transverse section through part of one of the appendicula of the same, near its base. $\times 110$.

Fig. 5. Transverse section through uterine wall of *Myliobatis nieuhofti*, showing fibrous and muscular coats, and mucous membrane, with the bases of three papillæ. $\times 21$.

Fig. 6. Obliquely transverse section through part of one of the uterine papillæ of the same, showing some of the simple follicles of the mucous membrane in oblique section, and one of the racemose follicles. $\times 110$.

III.—On Clebsch's Transformation of the *Hydrokinetic Equations.*

By ASUTOSH MUKHOPADHYAY, M. A., F. R. A. S., F. R. S. E.

[Received February 27th ;—Read March 6th, 1889.]

A first integral of the hydrokinetic equations of Euler may be obtained by known methods in three cases: (1) Irrotational motion; (2) Steady rotational motion; (3) General rotational motion. It is the object of this note to show how the method of applying Clebsch's transformation to the third case can be materially simplified, and incidentally the relation between the three solutions is pointed out.*

Starting, then, with the hydrokinetic equations, we remark that they may be at once reduced to the forms

$$\frac{du}{dt} - 2v\zeta + 2w\eta + \frac{dR}{dx} = 0 \quad \dots\dots\dots (1)$$

$$\frac{dv}{dt} - 2w\xi + 2u\zeta + \frac{dR}{dy} = 0 \quad \dots\dots\dots (2)$$

$$\frac{dw}{dt} - 2u\eta + 2v\xi + \frac{dR}{dz} = 0 \quad \dots\dots\dots (3)$$

where

$$R = \int \frac{dp}{\rho} + V + \frac{1}{2} q^2$$

$$q^2 = u^2 + v^2 + w^2$$

* For the ordinary method, see Basset's *Hydrodynamics*, vol. i, p. 28.

In the first case, for irrotational motion, the components of molecular rotation ξ , η , ζ vanish, implying the equations

$$u = \frac{d\phi}{dx}, \quad v = \frac{d\phi}{dy}, \quad w = \frac{d\phi}{dz}$$

and the equations of motion reduce to

$$\frac{dU}{dx} = 0, \quad \frac{dU}{dy} = 0, \quad \frac{dU}{dz} = 0$$

where

$$U = \frac{d\phi}{dt} + R.$$

Hence, the required first integral is

$$\int \frac{dp}{\rho} + V + \frac{1}{2} q^2 + \frac{d\phi}{dt} = F,$$

where F is ordinarily a function of the time, but for steady motion an absolute constant throughout the liquid.

Secondly, if the motion is rotational but steady, we have

$$\frac{du}{dt} = 0, \quad \frac{dv}{dt} = 0, \quad \frac{dw}{dt} = 0$$

and the equations of motion lead to

$$u \frac{dR}{dx} + v \frac{dR}{dy} + w \frac{dR}{dz} = 0$$

$$\xi \frac{dR}{dx} + \eta \frac{dR}{dy} + \zeta \frac{dR}{dz} = 0.$$

These linear differential equations lead, by Laplace's method, to the subsidiary systems

$$\frac{dx}{u} = \frac{dy}{v} = \frac{dz}{w}$$

$$\frac{dx}{\xi} = \frac{dy}{\eta} = \frac{dz}{\zeta}$$

which denote respectively stream lines and vortex lines. Hence, it is possible to construct a series of surfaces

$$R = \text{constant}$$

each of which shall be covered over with a net work of stream lines and vortex lines. Hence for steady rotational motion we have

$$\int \frac{dp}{\rho} + V + \frac{1}{2} q^2 = \text{constant},$$

the constant being an absolute constant so long as we pass from point to point on a stream line or vortex line, but which varies as we pass from one stream line to another or from one vortex line to another.

Thirdly, if the motion of the liquid is perfectly general, neither steady nor irrotational, we may put, after Clebsch,

$$u dx + v dy + w dz = d\phi + \lambda d\chi.$$

Observe for a moment that as this simply signifies that the differential expression on the lefthand side, when not a perfect differential may be resolved into two, one of which is so, and the other may be made so by means of an integrating factor, the legitimacy of the transformation is selfevident. We have then

$$u = \frac{d\phi}{dx} + \lambda \frac{d\chi}{dx}, \quad v = \frac{d\phi}{dy} + \lambda \frac{d\chi}{dy},$$

$$w = \frac{d\phi}{dz} + \lambda \frac{d\chi}{dz},$$

furnishing the known expressions

$$2\xi = \frac{d\lambda}{dy} \frac{d\chi}{dz} - \frac{d\lambda}{dz} \frac{d\chi}{dy}$$

$$2\eta = \frac{d\lambda}{dz} \frac{d\chi}{dx} - \frac{d\lambda}{dx} \frac{d\chi}{dz}$$

$$2\zeta = \frac{d\lambda}{dx} \frac{d\chi}{dy} - \frac{d\lambda}{dy} \frac{d\chi}{dx}$$

These lead to the equations

$$\xi \frac{d\lambda}{dx} + \eta \frac{d\lambda}{dy} + \zeta \frac{d\lambda}{dz} = 0$$

$$\xi \frac{d\chi}{dx} + \eta \frac{d\chi}{dy} + \zeta \frac{d\chi}{dz} = 0$$

both of which give the subsidiary system

$$\frac{dx}{\xi} = \frac{dy}{\eta} = \frac{dz}{\zeta}$$

the differential equation of vortex lines. Hence the vortex lines are obtained as the intersection of the surfaces $\lambda = \text{constant}$, $\chi = \text{constant}$. Again, the value of u gives

$$\frac{du}{dt} = \frac{d}{dx} \left(\frac{d\phi}{dt} + \lambda \frac{d\chi}{dt} \right) + \frac{d\lambda}{dt} \frac{d\chi}{dx} - \frac{d\lambda}{dx} \frac{d\chi}{dt}$$

Substituting in equation (1), we have at once

$$\frac{dH}{dx} + \frac{\delta\lambda}{\delta t} \frac{d\chi}{dx} - \frac{\delta\chi}{\delta t} \frac{d\lambda}{dx} = 0$$

where

$$H = \int \frac{dp}{\rho} + V + \frac{d\phi}{dt} + \lambda \frac{d\chi}{dt} + \frac{1}{2} q^2,$$

and δ denotes particle differentiation. Equations (2) and (3) lead to two similar equations, and we have

$$\xi \frac{dH}{dx} + \eta \frac{dH}{dy} + \zeta \frac{dH}{dz} = 0$$

leading to the subsidiary system

$$\frac{dx}{\xi} = \frac{dy}{\eta} = \frac{dz}{\zeta}$$

which denote vortex lines. Hence, we see that it is possible to construct a family of surfaces

$$H = \text{constant},$$

covered over by vortex lines, and the mode of integration shows *immediately* that the constant is a function of the time alone. Therefore, for steady rotational motion we have

$$\int \frac{dp}{\rho} + V + \frac{d\phi}{dt} + \lambda \frac{d\chi}{dt} + \frac{1}{2} q^2 = F(t)$$

along a vortex line.



IV.—*Note on Stokes's Theorem and Hydrokinetic Circulation.*

By ASUTOSH MUKHOPADHYAY, M. A., F. R. A. S., F. R. S. E.

[Received March 24th;—Read April 3rd, 1889.]

The object of this note is to give a new proof of Stokes's formula for hydrokinetic circulation

$$\int (u dx + v dy + w dz) = 2 \iint (l \xi + m \eta + n \zeta) dS,$$

and to point out how it is an immediate consequence of the theory of the change of the variables in a multiple integral.

Assume, after Clebsch,

$$u dx + v dy + w dz = d\phi + \lambda d\chi,$$

so that the integration being performed round a closed curve, we have

$$\int (u dx + v dy + w dz) = \int \lambda d\chi.$$

But, the value of

$$\int \lambda d\chi$$

taken round the closed curve is clearly equal to the sum of the values of

$$\int \int d\lambda \, d\chi$$

taken round the projections of the closed curve on the coordinate planes. Now, for the projected curve on the coordinate plane of yz , we have at once from the ordinary formulæ for the transformation of multiple integrals,

$$\begin{aligned} & \int \int d\lambda \, d\chi \\ &= \int \int \left(\frac{d\lambda}{dy} \frac{d\chi}{dz} - \frac{d\lambda}{dz} \frac{d\chi}{dy} \right) dy \, dz. \end{aligned}$$

The projected curves on the other two coordinate planes lead to two similar expressions. Hence, the circulation round the given closed curve is furnished by

$$\begin{aligned} & \int (u dx + v dy + w dz) \\ &= \int \int \left(\frac{d\lambda}{dy} \frac{d\chi}{dz} - \frac{d\lambda}{dz} \frac{d\chi}{dy} \right) dy \, dz \\ &+ \int \int \left(\frac{d\lambda}{dz} \frac{d\chi}{dx} - \frac{d\lambda}{dx} \frac{d\chi}{dz} \right) dz \, dx \\ &+ \int \int \left(\frac{d\lambda}{dx} \frac{d\chi}{dy} - \frac{d\lambda}{dy} \frac{d\chi}{dx} \right) dx \, dy. \end{aligned}$$

But, as an immediate consequence of Clebsch's transformation, we have

$$\begin{aligned} u &= \frac{d\phi}{dx} + \lambda \frac{d\chi}{dx} \\ v &= \frac{d\phi}{dy} + \lambda \frac{d\chi}{dy} \\ w &= \frac{d\phi}{dz} + \lambda \frac{d\chi}{dz}, \end{aligned}$$

whence

$$\begin{aligned} 2\xi &= \frac{dv}{dy} - \frac{dw}{dz} = \frac{d\lambda}{dy} \frac{d\chi}{dz} - \frac{d\lambda}{dz} \frac{d\chi}{dy} \\ 2\eta &= \frac{du}{dz} - \frac{dw}{dx} = \frac{d\lambda}{dz} \frac{d\chi}{dx} - \frac{d\lambda}{dx} \frac{d\chi}{dz} \\ 2\xi &= \frac{dv}{dx} - \frac{du}{dy} = \frac{d\lambda}{dx} \frac{d\chi}{dy} - \frac{d\lambda}{dy} \frac{d\chi}{dx}. \end{aligned}$$

Therefore, putting

$$dy \, dz = l \, dS, \quad dx \, dz = m \, dS, \quad dx \, dy = n \, dS,$$

where l, m, n are the direction cosines of the normal, we have

$$\begin{aligned} & \int (u \, dx + v \, dz + w \, dy) \\ &= \int \int \left\{ l \left(\frac{dw}{dy} - \frac{dv}{dz} \right) + m \left(\frac{du}{dz} - \frac{dw}{dx} \right) + n \left(\frac{dv}{dx} - \frac{du}{dy} \right) \right\} dS \\ &= 2 \int \int (l\xi + m\eta + n\zeta) \, dS, \end{aligned}$$

which is Stokes's Theorem. It is worth noting that as no physical conception enters into the above proof, it holds good whether we regard the theorem as a purely analytical one or as merely furnishing a formula for hydrokinetic circulation.

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V.—On a Curve of Aberrancy.

By ASUTOSH MUKHOPADHYAY, M. A., F. R. A. S., F. R. S. E.

[Received May 23rd;—Read June 5th, 1889.]

If a curve be referred to rectangular axes drawn through any origin, the coordinates  $(\alpha, \beta)$  of the centre of aberrancy, which is the centre of the osculating conic at any given point  $(x, y)$  of the curve, are given in the most general form by the system

$$\begin{aligned} \alpha &= x - \frac{3qr}{3qs - 5r^2} \\ \beta &= y - \frac{3q(pr - 3q^2)}{3qs - 5r^2} \end{aligned}$$

where  $p, q, r, s$  are the successive differential coefficients of  $y$  with respect to  $x$ .\* The locus of  $(\alpha, \beta)$  is called the aberrancy curve of the given curve, and in this note, I shall investigate the aberrancy curve of a plane cubic of Newton's fourth class†

$$y = ax^3 + 3bx^2 + 3cx + d$$

in which the diametral conic degenerates into the line at infinity.

We have

$$\begin{aligned} p &= 3(ax^2 + 2bx + c) \\ q &= 6(ax + b) \\ r &= 6a \\ s &= 0 \end{aligned}$$

\* J. A. S. B. 1888, vol. lvii, part ii, p. 324.

† Salmon's Higher Plane Curves, (Ed. 1879), p. 177.

whence

$$pr - 3q^2 = 18(ac - b^2) - 90(ax + b)^2$$

$$a = \frac{8x}{5} + \frac{3b}{5a}$$

$$\beta = y + \frac{ax + b}{10a^2} \left\{ 18(ac - b^2) - 90(ax + b)^2 \right\}$$

Therefore

$$x = \frac{3a}{8} - \frac{3b}{8a}$$

$$ax + b = \frac{5}{8}(aa + b)$$

and

$$y = \beta - \frac{9(aa + b)}{8a^2} \left\{ (ac - b^2) - \frac{125}{64}(aa + b)^2 \right\}$$

But from the equation of the curve we have

$$a^2y = (ax + b)^3 + 3a(ac - b^2)x + a^2d - b^3.$$

Therefore, substituting for  $x$  and  $y$  in terms of  $a$  and  $\beta$ , we have

$$64a^2\beta = -125a^3a^3 - 375a^2ba^2 + (192ac - 567b^2)aa + (64a^2d - 189b^3),$$

or, writing  $x, y$  for  $a, \beta$ , we see that the aberrancy curve of the plane cubic

$$y = ax^3 + 3bx^2 + 3cx + d$$

is another plane cubic of the same class

$$y = Ax^3 + 3Bx^2 + 3Cx + D$$

where

$$A = -ka$$

$$B = -kb$$

$$C = -kc + (1 + k)\frac{ac - b^2}{a}$$

$$D = -kd + (1 + k)\frac{a^2d - b^3}{a^2}$$

$$k = \frac{125}{64}.$$

If, therefore,

$$H = ac - b^2, G = a^2d - 3abc + 2b^3$$

be the invariants of the given cubic, and  $H', G'$  the corresponding quantities for the aberrancy cubic, viz.,

$$H' = AC - B^2, G' = A^2D - 3ABC + 2B^3,$$

we have by direct calculation

$$H' = -kH$$

$$G' = k^2G.$$

It follows, therefore, that the quantity

$$\frac{H^2}{G} = \frac{(ac - b^2)^2}{a^2d - 3abc + 2b^3}$$

is an invariant for the given cubic and its aberrancy curve.

If we seek the common points of intersection of the two cubics, we find on subtracting the equations

$$(ax + b)^3 = 0$$

which shews that the two cubics have only one common point of intersection which is the point of inflexion for both; the coordinates of the point are

$$x = -\frac{b}{a}, \quad y = \frac{G}{a^2}$$

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VI.—*Natural History Notes from H. M. Indian Marine Survey Steamer 'Investigator,' Commander ALFRED CARPENTER, R. N., D. S. O., commanding.*—No. 15. *Descriptions of seven additional new Indian Amphipods.*—By G. M. GILES, M. B., F. R. C. S., late Surgeon-Naturalist to the Survey.

[Received and Read November 6th, 1889.]

(With Plate II.)

Before proceeding to the description of the species now described, I have to make a correction in my last paper read on February 1st, 1888.

In that communication, I described, under the name of *Concholestes dentallii*, gen. et sp. nov., a curious corophiid which inhabits deserted dentalium shells; remarking that I believed that such a habit had not been previously noted in an amphipod. I find, however, I was in error in this matter, as, while searching for references to species which might be identical with those described in the present paper, I came across a description of a Norwegian species which is certainly congeneric and, like the Indian species, inhabits deserted dentalium shells. Sars (Forth. Vidensk.-Selsk. Christiania, 1882, No. 18, pp. 113, Part VI, fig. 7) describes this species as *Siphonæcetes pallidus*.

I do not see, however, how either Sars' or my species can be included in *Siphonæcetes* without unduly straining Kroyer's definition of the genus in Nat. Tidskr. I, p. 491. In the two species under consideration, the 1st and 2nd gnathopoda, instead of being subequal, present a very marked difference of size; and again, the eighth thoracic appendages are very long, instead of the 6th, 7th, and 8th being "very short." My species too wants the double hook to the single ramus of the last



abdominal appendage, having indeed no rami, and, as far as I can make out, Sars' species agrees in these particulars also.

It appears to me therefore preferable that Sars' species should stand as *Concholestes pallidus* (Sars).

While, however, certainly congeneric, the two species are without doubt specifically distinct, mine differing from *C. pallidus* in the even more marked disproportion between the second and third thoracic appendages, and in the third having a much better developed subchela, which is formidably armed with two strong teeth, as also in having the excessive length of the eighth less marked.

MELITA COTESI, n. sp., Pl. II, Fig. 1.

This species is allied to *M. leonis* and *M. formosa* described by Murdoch, P. U. S. Nat. Mus., VII, pp. 521.

It illustrates the danger of naming a species from what may, at first sight, appear a very prominent peculiarity. In a previous communication, I described a *Melita* which I named *megacheles* on account of the large size of the subchela of the second gnathopod, which appeared larger proportionally than that of any species which I could find described. Our present find, however, out-herods Herod in this particular, and fearing to use any superlative appellation, lest another even more formidably armed should turn up, I name it after Mr. Cotes of the Indian Museum, but for whose kindness in undertaking the wearisome work of searching through references while I was at sea, this series of papers on Indian Amphipoda would have been greatly delayed in appearance.

About 7 mm. long; semitransparent, with minute reddish dots scattered over the whole surface, and an especially large patch on the propodite and basipodite of the second gnathopod.

*Head* small, no larger than an average thoracic segment; eye small, round, placed in the angle between antennules and antennæ.

*Thorax* forms more than half the length of the body; coxal plates rather narrow, especially the hinder ones.

*Abdomen* relatively small, the hinder edge of each segment save the last shewing more or less distinctly three dentations on either side of the middle line.

*Antennules* nearly as long as the head and thorax, the peduncle, the second joint of which is considerably the longest, forming rather the shorter half; appendix three-jointed.

*Antennæ* rather shorter, the peduncle, whose first three joints are very short, having the last two joints so long that the entire peduncle forms at least two-thirds of the length of the organ.

*Maxillipedes* moderately large, subpediform.

The 2nd of the *thoracic appendages* small, barely subchelate. The 3rd of the left side is enormously developed. The propodite alone as long as the first five segments of the thorax and wider than the depth of the body including the coxal plates. The inferior border smooth with one broad lunate projection. The dactylo-podite proportionally large. The appendage of the left side barely subchelate and but little larger than the second appendage. The 4th small, and the 5th almost minute. The 6th, 7th, and 8th large, the seventh being the largest and as long as the head and thorax, while the eighth falls but little short of it.

The *gill plates* are exceptionally large.

The *abdominal appendages* are small, but call for no special remarks, being in every way normal and typical of the genus.

HAB. Andaman Islands, in shallow water.

*PHOXUS UNCIROSTRATUS*, n. sp., Pl. II, Fig. 2.

This species was dredged in 5—10 fathoms off the "Seven Pagodas" on the Madras coast on a sandy bottom.

It is about 5 mm. in length and of a uniform dirty white colour.

The *head* is small, the arched and excavated rostrum considerably exceeding the head proper in length. The former is long and pointed, and is bent down at the tip so as to form a distinct hook, a feature in which it appears to differ from all the previously described members of the genus.

The *thorax* is large, forming nearly half the entire body length, and this portion of the body, excluding the coxal plates, is depressed rather than compressed. The first four coxal plates are very large, exceeding their corresponding segments in depth, the fourth being of exceptional size; they, besides being the deepest, are of great width, exceeding in this diameter the length of any two of the thoracic segments; the three hindermost coxal plates, on the other hand, are exceptionally small.

The *abdomen* is of moderate size, its first four segments being of nearly equal length, while the last two are extremely small.

The *telson* is small and cleft, and is furnished with a few fine hairs.

The *antennule* is as long as the head and first thoracic segment together, the peduncle forming rather the shorter portion of the organ. Its first joint is very long and stout, but is almost completely hidden under the excavated lower surface of the rostrum, the remaining two joints of the peduncle being short, and comparatively slight. The flagellum consists of 14—16 short articuli, and is but little longer than

its appendage, which consists of about twelve joints, and almost exactly equals the peduncle in length.

The *antenna* is subequal to the antennule in length, and is quite equally divided into peduncle and flagellum, the first of the five joints of the former being hidden beneath the rostrum.

The *gnathites* are small and weak, the mandibles being quite simple, and armed with a small cutting and a serrated masticatory tubercle; its appendage is two-jointed, and but feebly armed with hairs.

The maxillæ are proportionally somewhat stouter, and have their rami armed with a number of very stout curved spines.

The maxillipedes are of considerable size, and pediform.

The *gnathopoda* are small, not more than twice as long as the depth of their corresponding coxæ; both are of similar form, subchelate, with the palm oblique, and defined by a large triangular process, but the hinder pair is somewhat the larger.

The fourth and fifth *thoracic appendages* are of the usual ambulatory type, are subequal, and but little exceed the *gnathopoda* in length. The sixth and seventh resemble each other in form, being stoutly built and laterally armed with strong spines; the seventh, however, is the longer, equalling the entire thorax in length, while the sixth is but as long as its first six segments. The eighth is the shortest of the thoracic appendages, and is of peculiar form, its basipodite being expanded into a broad oval plate which projects downwards behind the distal articulation of the appendage, so as almost to reach the level of the point of the dactylopodite.

The first three *abdominal appendages* are rather small, but quite of the usual type. Of the last three, the fifth is the shortest. It and the fourth are armed with numerous stout, almost hooked spines; their rami are nearly equal. The sixth is peculiar in having its outer ramus distinctly two-jointed, while the inner ramus is considerably shorter than the first joint of the outer; both rami are armed with a brush of stout hairs.

Although I carefully dissected the head of one specimen, I could make out no trace of eyes.

AMPELISCA DALEYI, n. sp., Pl. II, Fig. 3.

A single specimen of this species was dredged in 7 fathoms, off the Seven Pagodas, on the Madras coast. Unfortunately the specimen was accidentally destroyed, but not before I had made a drawing.

It differs considerably from its congener previously obtained in Indian waters (*A. lepta* from 107 fathoms) in being a larger and much more robust form, in the minuteness of its superior antennæ, and in

the comparative shortness of the limbs, and appears to most nearly resemble *A. australis*, Haswell, from which, however, it differs in the comparative length of the joints of the thoracic appendages.

My specimen was 11 mm. long; of a pale brown colour liberally marked with patches of a deep brown.

The *head* is small and oval, the two pairs of simple eyes being placed respectively opposite the origins of the antennules and antennæ.

The *thorax* forms more than half the body length, its four anterior segments increase progressively in length, but the three hinder are subequal and longer than any of the other segments, thoracic or abdominal. The first four coxal plates are deeper than their corresponding segments, the fourth being the deepest, and also exceptionally broad. The fifth coxal plate has an anterior lobe of moderate depth, and has the hinder border of the posterior lobe subdivided by a notch into two lobules, of which the upper is the smaller.

The *abdomen* forms rather more than one-third of the entire body length, its first three segments are subequal in length, and each is as long as the remaining three together. Their depth is moderate, not exceeding that of the thoracic segments with their attached coxæ.

The *telson* is small, squamiform, and deeply cleft.

The *antennule* is very minute, being barely as long as the head and first thoracic segment; the first joint of the peduncle is moderately stout, but the remaining two joints can barely be distinguished from the articuli of the flagellum, especially the third, which but little exceeds them in length. The peduncle forms about one-third of the entire length of the organ.

The *antenna* is more than twice as long as the antennule. Its first two joints are short and moderately stout, while the distal three are very long and slender, the third being the longest and the fifth the shortest; the flagellum is composed of a number of long slender articuli, but was broken off, so that the entire length could not be ascertained.

The *gnathites* are completely hidden beneath the opaque first coxal plate.

The second and third *thoracic appendages* (gnathopoda) are small, and have the propodite merely dilated without forming a true subchela. The third is somewhat the larger. The fourth and fifth are of similar form, but the fifth is a little the larger, the fourth being as long as the head and first four thoracic segments. In both, the meropodites are peculiarly long and the carpopodites very short. The last three are remarkable in having their dactylopodites curved backwards, instead of forwards, as is usually the case. The sixth and seventh have the

basipodites much enlarged, especially the latter. Their meropodites are short and their dactylopodites remarkably long and slender, the seventh, which is the longer, is subequal in length to the fourth. The eighth is peculiar in having its posterior border provided with a flat plate which reaches considerably below the articulation with the ischiopodite; the ischio-mero- and carpopodites are subequal, the propodite comparatively long and slender, and the dactylopodite minute.

The first three *abdominal appendages* are of the usual type, and the last three equally biramous and of progressively smaller size, the sixth being proportionally smaller than in nearly any member of the genus, except *A. propinqua*, Boeck., which differs, however, in a number of other points.

LYSIANASSA WOOD-MASONI, n. sp., Pl. II, Fig. 4.

This species was dredged from a coral sand bottom in 17 fathoms in Macpherson's Strait, Andaman Islands.

The animal is 8 mm. long, semitransparent, and colourless, with the exception of the eye, which is of a deep purple tint.

The *head* is small, having, in profile, an irregularly pentagonal outline. The large compound eye occupies the greater part of its anterior half, and the border articulating with the antennule is marked by two notches with a tubercle between them.

The *thorax* forms rather more than half the entire body length, its segments increasing regularly in dimensions from before backwards. All the coxal plates are deep, the fourth, however, markedly exceeding the others. The lower borders of the last three present a notch for the articulation of their corresponding basipodite.

The first three *abdominal segments* are large and subequal; the fourth, nearly as long, but much less in depth; and the last two very small.

The *telson* is laminar and notched.

The *antennule* is as long as the first four thoracic appendages. Its peduncle forms but a third of its length, the first joint being large and having its lower border produced distally into a sort of process, while the last two are extremely short. There is a very minute appendage consisting of four articuli. The first joint of the flagellum is much larger than those that succeed it, approaching the first joint of the peduncle in length. It bears on its lower border a brush of long silky hairs.

The *antenna* is as long as the thorax: its peduncle forms but one-fourth of its length, and consists of two subequal, very short basal, and three, also subequal, somewhat longer, distal joints. The flagellum is made up of a large number of short articuli.



A single specimen only having been obtained, the *gnathites* could not be closely examined.

The 2nd of the *thoracic appendages* is very small, not as long as the antennule, and imperfectly subchelate. The 3rd is nearly twice as long as the 2nd, but is scarcely at all stouter, and is provided with an obliquely palmed subchela, the dactylopodite being minute and much curved. The 4th and 5th are ordinary ambulatory legs, moderately stout and subequal to each other, and equal to the 3rd in length. The 6th is barely as long as the 1st gnathopod, and is remarkable for its basipodite, which is of nearly circular outline and very deeply serrate on its posterior border. The 7th is nearly as long as the 2nd gnathopod, and its basipodite has a tendency to the same form as that of the 6th. Its basipodite is rather broader than long, but its borders are quite smooth. The distal joints of each of the last three thoracic appendages are armed with closely set, sharp, short spines.

There is nothing remarkable about the first three *abdominal appendages*, and the last three are equally biramous, armed both on propodite and rami with short, stout spines. The 4th is the longest of the three, and the 5th, the smallest, while the 6th is remarkable for its short, stout, almost spherical propodite, and for the size of its rami, which are larger in all respects than those of the preceding abdominal appendages.

ANONYX INDICUS, n. sp., Pl. II, Fig. 5.

The present species was dredged in 5—10 fathoms off the Seven Pagodas, Madras, on the same occasion as *Phoxus uncistrostratus*. In colour it is of a pale earthy white, and it measures about 5 mm. in length.

The *head* is small and oblong, its anterior upper part carrying the large compound eyes.

The *thorax* and *abdomen* are subequal in length, but the abdomen is much the deeper and stouter.

The *thoracic segments* increase somewhat in length and depth from before backwards, but are everywhere narrow. The first four coxal plates are large, the fourth being the largest, and are each nearly twice as deep as their corresponding segments. The last three are markedly smaller and are much narrower than their segments.

The first three *abdominal segments* are large in all dimensions; the fourth is as long as the seventh thoracic segment, and the last two very short indeed.

The *telson* is laminar and double.

The *antennule* is short, the peduncle, which forms the larger half of its length, being barely as long as the head. Its first joint is

nearly spherical, and exceeds a good deal in length either of the remaining two pieces, of which the distal is somewhat the smaller. The flagellum is composed of 12 or 14 short articuli, and its appendage, which is about half its length, of a smaller number of slighter, but otherwise closely similar, pieces.

The *antenna* is slighter but somewhat longer than the antennule. In the female, the flagellum but little exceeds that of the antennule, but, in the male, it often forms a lash of considerable, but variable, length.

The *gnathites* are small and feebly armed, the mandibles having but a simple chisel-like cutting plate, and a two-jointed appendage, and the maxillepedes being small and not pediform.

The first of the *gnathopods* is short, stout, and subchelate, the palm being but somewhat oblique and the dactylopodite short and strong. The second is much longer than the first, but is very slender. Its propodite resembles that of the first in general outlines, but the dactylopodite is so small that it might easily be overlooked, forming only a small extremely hooked claw projecting from the middle of the distal extremity of the propodite. It was only, however, after a repeated and very troublesome examination that I succeeded in getting a clearly uninjured specimen of the appendage to project beyond the coxal plates. In length the second gnathopod almost equals the first six segments of the thorax.

The fourth and fifth *thoracic appendages* are subequal to each other, but shorter and slenderer than any of the other appendages; they are quite of the usual ambulatory type. The sixth, seventh, and eighth closely resemble each other in form, but differ considerably in length, all three having the posterior border of their basipodites provided with very broad and strong buttress-like plates, and the remaining articulations broad and strong; while, however, the eighth is as long as the head and thorax, the seventh is about two-thirds and the sixth a little over one-half this length.

The first three *abdominal appendages* are of medium size and of the usual type. The last three are biramous, the rami of each being equal. The fourth is much larger than the fifth, the sixth still smaller, the entire length of the last only equalling that of the propodite of the fourth.

PARAPLEUSTES PICTUS, n. sp., Pl. II, Fig. 6.

This species appears to answer best to the genus *Parapleustes* proposed by Buchholz (Zweite deutsche nord polar Fahrt, 1866—1870, p. 337) for a species (much resembling the present) which was dredged off

the east coast of Greenland. Our species was dredged in 30 fathoms, in Manner's Straits, Andaman Islands. Found crawling upon a *Pennatula*, the pink and white colours of which are almost exactly imitated in the amphipod.

The distribution of the colouring varies in different specimens. In one, the head and body as far as the fourth thoracic segment and the entire abdomen were pink, while the remaining middle zone of the body was of an opaque glistening white. In another, the distribution was almost reversed, the pink forming a broad band in the middle of the animal. In a third it was almost confined to the hinder part of the body. In all, however, the tints were the same, the pink parts having a uniform transparent character diversified by minute opaque spots of a darker tint, while the white was remarkable for its dead opacity.

The largest specimen measured about 7 mm., the smallest little more than 2 mm.

The head is rather long and cylindrical, its anterior half being almost completely covered by the eyes, which are of a pink colour, deeper than any other part of the body.

The remainder of the length of the body is almost exactly divided between *thorax* and *abdomen*, the latter, however, being much the deeper. The segments of the thorax are of nearly equal length throughout, but the more posterior are much the deeper. In the abdomen the third segment is considerably the longest, while the second exceeds the rest in depth, as well as all, save the third, in length.

The fourth abdominal segment is nearly as long as the first, but very narrow, while the last two are very small in all dimensions.

The *telson* is simple and squamiform, equalling in length the protopodite of the sixth abdominal appendage. It is armed with a few fine hairs.

The first four *coxal plates* are very deep and broad, the fourth being the largest, the last three comparatively small. Spence Bate (Ann. Nat. Hist. Ser. 3, Vol. I, p. 362, 1858), in his definition of the genus, states that the "Coxa of the second pair of pereopoda" (fourth coxal plate) is "very deeply excavated upon the upper part of the posterior margin to receive the coxæ of the third pair of pereopoda." This is, however, more apparent than real, at any rate in the present species; the appearance being the optical expression of the fact that the fifth coxal plate overlaps the fourth as well as the sixth, the upper part of the former not being remarkably excavated, but narrowing uniformly to its articulation with the pleuron of its segment.

The *antennule* has a three-jointed peduncle not exceeding the head and first thoracic appendage in length. The first joint is somewhat

longer than the second, while the third is very short. The flagella of both antennæ vary somewhat in length in various specimens, the number of articuli, however, remaining about the same, the increase being gained by an elongation of all the pieces. In the specimen figured the flagellum but slightly exceeds the peduncle in length, but in others it was considerably longer. There is no appendage to the flagellum.

The first three joints of the peduncle of the *antenna* are very short and, except the end of the third, hidden beneath the excavated cephalon. The last two joints equal in length the first two of the antennule. The flagellum also varies in length, but is always about a third shorter than that of the antennule.

The *gnathites* were not dissected out, but a mandibular appendage was distinguished, and it could be seen that the maxillipeds are small but pediform.

The two pairs of *gnathopoda* closely resemble each other alike in size and form. Both are feebly subchelate, with the palm oblique, the propodite forming about one-third of the entire length exclusive of the dactylopodite. Their carpo-mero- and ischiopodites are shorter than their breadth, while the basipodites form nearly a half of the length of the appendage exclusive of the dactylopodite.

The 4th and 5th *thoracic appendages* are of the usual ambulatory type, are subequal to each other, and, in length, to the gnathopoda, each being as long as the head and first five thoracic somites. They are very slender and closely resemble each other in all particulars. The 6th, 7th, and 8th closely resemble each other in all points save in size, each being stoutly built and having the basipodite provided with a strong buttress-like plate along the posterior border. The 7th and 8th are subequal, being as long as the thorax and the first two abdominal segments, but the sixth is about one-sixth shorter.

The first three *abdominal appendages* are small, but quite of the usual type. The last three are biramous, with equal rami; the fourth being the longest and the sixth the shortest of the three. The fourth and fifth have their rami armed with stout spines, while the sixth has only fine hairs.

#### CYRTOPHIUM ANDAMANENSE, n. sp., Pl. II, Fig. 7.

Taken in the surface net at Port Mouat, Andaman Islands. Only a single specimen was obtained and this was swimming free, nor could any trace of a tube be found; probably this had got destroyed by the wash of the tide.

The animal is about 3 mm. long and of a dirty white colour, sparsely sprinkled with minute dark brown spots.



Its nearest allies appear to be *O. orientale*, Dana, and *O. cristatum*, Thomson, from the former of which it differs in its superior antenna being proportionally smaller, in the comparative shortness of the dactylopodite of the second gnathopod, and in the details of the armature of the hinder pleopoda; and from the latter in both pairs of antennæ being proportionally smaller and in wanting any marked crest on the hinder part of the thorax.

The head is subquadrate, rather deeper than long, its length forming only one-eighth of the entire body length.

The small eye is placed on a prominence opposite the origin of the antenna.

The thorax is long, forming three-sevenths of the entire length. Its segments are long and slender, the anterior and posterior ones being larger than those at its mid length, and the fifth segment exceptionally small.

The abdomen is small and, like the thorax, slender. Its first three segments are rather shorter than average thoracic segments. The fourth, though narrow, is longer than the others, while the fifth and sixth are extremely small.

The telson is small and laminar, and is armed with a few short, stiff hairs.

The antennule is fully as long as the head and first four thoracic segments. More than three-fourths of its length are formed by the peduncle; the first joint of which, though very stout, is shorter than either of its two other joints, while the second is considerably the longest. There is a minute secondary appendage, consisting of four short joints. The flagellum is only as long as the first joint of the peduncle; it too consists of four joints, the first of which forms quite half its length. The entire inferior surface of the appendage is armed with closely placed long hairs.

The antenna is as long as the head, thorax, and first two abdominal segments; it is very stoutly built and adapted for climbing. The first three joints of its peduncle are short and together as long as the flagellum, while the two distal joints are subequal, and form two-thirds of the entire length of the organ. The flagellum consists of two stout long joints, which are armed with strong hooked spines. The entire lower surface of the peduncle being furnished with long stiff hairs, like those on the superior antenna. Its last joint is armed with two pairs of stout, hooked spines, and by a hooked terminal nail.

The gnathites could not be closely examined, but it could be seen that the mandibular appendage is large and clawed, and that the maxilliped is exceptionally large and pediform.



The first of the *gnathopods* is small, being no longer than the first two joints of the peduncle of the superior antenna; nearly half its length is made up by the basipodite. The articulation between the ischiopodite and meropodite is very oblique, and the appendage appears to consist of but five pieces, owing probably to the dactylopodite being fused with the propodite, the subchela being formed between these and the dilated carpopodite. The second is very much larger than the first, being nearly as long as the head and entire thorax; it, however, resembles it closely in general form, and like it is composed of but five pieces.

The fourth and fifth *thoracic appendages* are subequal and exactly similar, and have the distal extremities of their articuli dilated so as to admit of very free flexion, but are otherwise of the usual ambulatory type. In length they nearly equal the first six thoracic segments. The sixth, seventh, and eighth much resemble the fourth and fifth but are stouter built, and, while the sixth is only subequal to them, the seventh is as long as the antennule, and the eighth as long as the antennule except the last joint of the flagellum.

The first three *abdominal appendages*, though of the usual type, are exceptionally small. The fourth is as long as the last joint of the peduncle of the antennule, its propodite forming half its length. Its rami are unequal, the outer being hardly more than half the length of the inner, both rami and peduncle being armed with stout spines. The fifth is only two-thirds the length of the fourth, but is stouter; like the fifth, its rami are unequal and spinose. The sixth is reduced to a rudimentary tubercle, armed with one or two spines.

#### EXPLANATION OF PLATE II.

Fig. 1. *Melita cotesi*,  $\times 20$ ; 1a, 2nd and 3rd right thoracic appendages,  $\times 10$ .

Fig. 2. *Phorus uncistrostratus*,  $\times 15$ ; 2a, mandible and appendage,  $\times 30$ ; 2b, the maxillæ,  $\times 120$ ; 2c, the 6th abdominal appendage,  $\times 30$ .

Fig. 3. *Ampelisca daleyi*,  $\times 7$ .

Fig. 4. *Lysianassa wood-masoni*,  $\times 10$ .

Fig. 5. *Anonyia indicus*,  $\times 12.5$ ; 5a, distal joints of 3rd thoracic appendage,  $\times 50$ .

Fig. 6. *Parapleustes pictus*,  $\times 15$ .

Fig. 7. *Cyrtophium andamanense*,  $\times 25$ ; 7a, flagellum of inferior antennæ,  $\times 30$ ; 7b, last three abdominal segments with appendages,  $\times 30$ .

# JOURNAL

OF THE

## ASIATIC SOCIETY OF BENGAL.

### Part II.—NATURAL SCIENCE.

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SUPPLEMENT.—1890.

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- 1.—*Catalogue of the Insecta of the Oriental Region.* No. 2, *Order Coleoptera, Family Carabidæ.*—By E. T. ATKINSON, B. A.

DR. Horn writes that the *Carabidæ* form one of the members of the Adephagous series of Coleoptera, which 'is readily recognized by the predaceous character of its mouth parts, its slender antennæ (except in the *Gyrinidæ*), pentamerous tarsi, and the structure of the first abdominal segment, which is in all cases divided or hidden by the posterior coxæ in such a manner that it is entirely lateral, rarely appearing as a small triangular piece between the posterior coxæ.'

The classification of the *Carabidæ* is still unsettled, and, notwithstanding the very great attention paid to this group, there is no generally recognized arrangement that can be followed for the species of the Oriental Region. The number of groups, their extent, relative position, and nomenclature, still leave much to be desired. Leconte, † writing in 1862, remarked:—'Numerous efforts have been made to indicate a rational distribution of the genera, and the attempts commenced by Latreille and Bonelli, and successively improved by the suggestions of Dejean, Erichson, Schiödte, Lacordaire, and myself, have finally, in the expert hands of Schaum, \* assumed a form in which probably permanent results have been obtained.'

† 'Classification of the Coleoptera of North America,' in Smithsonian Miscellaneous Collections, 1862.

\* Naturg. Ins. Deutschl. 1860, and 'Das system der Carabiceen,' in Berlin. Ent. Zeits., iv, 1860, p. 161.

Following the suggestions of the later authors, Leconte divided the whole family into three sub-families, formed thus :—

Middle coxæ distant ;

Epimera of the mesonotum reaching the coxæ ... 1. CARABIDÆ.

Epimera of the mesonotum not reaching the coxæ ... 3. HARPALIDÆ.

Middle coxæ contiguous ... ... 2. OZENIDÆ.

In the *Carabidæ*, he placed the tribes *Omophronini*, *Hiletini*, *Carabini*, and *Scaritini*. To the second sub-family he attached the *Oxæninini* and *Pseudomorphini*, and all the rest to the third sub-family. Leconte, writing of the Coleoptera of North America, did not indicate the position of the extra-American genera.

In 1880, † Kölbe, starting with the hypothesis that the land-beetles are later than the water-beetles, and that the points common to both are of primary value in classification, divided the family '*Carnivora*' into six sections, which are further subdivided into groups. His arrangement, however, does not help us, and the placing of the family *Cicindelidæ* as a simple subsection of one of his groups does not appear to be correct.

In 1881, Dr. G. H. Horn, ‡ reviewed the genera of the *Carabidæ* of North America, and, in doing so, gave the following arrangement of the Adepagous families, which is followed in the present catalogue :—

I. Metasternum with an ante-coxal piece, separated by a well-marked suture, reaching from one side to the other, and extending in a triangular process between the coxæ.

Antennæ 11-jointed : posterior coxæ mobile and simple ; habits terrestrial.

Antennæ inserted on the front above the base of the mandibles :  
*Cicindelidæ.*

Antennæ arising at the side of the head, between the mandibles and the eyes :  
*Carabidæ.*

Antennæ 10-jointed : posterior coxæ fixed, and with large plates almost entirely concealing the abdomen : habits aquatic :  
*Haliplidæ.*

II. Metasternum with a very short ante-coxal piece, the suture indistinct, posteriorly not prolonged between the coxæ : habits aquatic : legs ambulatorial : anterior coxæ globular :

*Amphizoidæ.*

Legs natatorial : anterior coxæ conical :  
*Pelobiidæ.*

† *Natürliches System der Carnivoren Coleoptera*, in *Deutsche Ent. Zeits.*, xxiv, 1880, p. 253.

‡ 'On the genera of the *Carabidæ*, with special reference to the fauna of Boreal America,' in *Trans. Amer. Ent. Soc.*, 1880, p. 91-196.

III. Metasternum prolonged behind in a triangular process, the ante-coxal piece entirely wanting: habits aquatic.

Antennæ slender, filiform or setaceous, abdomen with six segments: eyes two: *Dytiscidæ.*

Antennæ irregular, very short: abdomen with seven segments of which the first two are closely united: eyes four: *Gyrinidæ.*

The *Carabidæ* are divided into three sub-families:—

Middle coxal cavities not entirely enclosed by the sterna, the epimeron of the mesosternum attaining the coxæ: *Carabinae.*

Middle coxal cavities entirely enclosed by the sterna, the epimeron of the mesosternum not attaining the coxæ.

Head without antennal grooves beneath and with distinct super-orbital setæ: ambulatorial setæ of abdomen usually well developed. *Harpalinæ.*

Head with distinct, usually long, antennal grooves beneath, and without distinct super-orbital setæ: ambulatorial setæ of the abdomen feeble or wanting. *Pseudomorphinæ.*

The Harpalinæ are further subdivided into two sections, the first in which the head has two super-orbital setigerous punctures, the second in which there is but one. The groups included in the subfamilies are as follows:—

|                          |                             |                            |                           |
|--------------------------|-----------------------------|----------------------------|---------------------------|
| <b>Carabinae.</b>        | 13. <i>Promceognathini.</i> | 25. <i>Licinini.</i>       | 38. <i>Cratocerini.</i>   |
| 1. <i>Omophronini.</i>   | 14. <i>Enceladini.</i>      | 26. <i>Platynini.</i>      | 39. <i>Orthogonini.</i>   |
| 2. <i>Trachypachini.</i> | 15. <i>Scaritini.</i>       | 27. <i>Anchonoderini.</i>  | <b>Harpalinæ II</b>       |
| 3. <i>Cychrini.</i>      | <b>Harpalinæ I.</b>         | 28. <i>Ctenodactylini.</i> | 40. <i>Brachynini.</i>    |
| 4. <i>Carabini.</i>      | 16. <i>Panagæini.</i>       | 29. <i>Odacanthini.</i>    | 41. <i>Apotomini.</i>     |
| 5. <i>Pamborini.</i>     | 17. <i>Siagonini.</i>       | 30. <i>Dryptini.</i>       | 42. <i>Broscini.</i>      |
| 6. <i>Hiletini.</i>      | 18. <i>Ozenini.</i>         | 31. <i>Mormolyceini.</i>   | 43. <i>Zacotini.</i>      |
| 7. <i>Elaphrini.</i>     | 19. <i>Nomiini.</i>         | 32. <i>Agrini.</i>         | 44. <i>Peleciini.</i>     |
| 8. <i>Loricerini.</i>    | 20. <i>Psydrini.</i>        | 33. <i>Egini.</i>          | 45. <i>Chlæniini.</i>     |
| 9. <i>Nebriini.</i>      | 21. <i>Morionini.</i>       | 34. <i>Lebiini.</i>        | 46. <i>Zabrinini.</i>     |
| 10. <i>Migadopini.</i>   | 22. <i>Bembidiini.</i>      | 35. <i>Helluonini.</i>     | 47. <i>Harpalini.</i>     |
| 11. <i>Metriini.</i>     | 23. <i>Pogonini.</i>        | 36. <i>Graphipterini.</i>  | 48. <i>Pseudomorphinæ</i> |
| 12. <i>Mystropomini.</i> | 24. <i>Pterostichini.</i>   | 37. <i>Anthiini.</i>       |                           |

Several of these groups are further subdivided, but these details need not be noticed here.

M. Borré writes of this arrangement:—'Beaucoup des genres prennent ainsi des places bien différentes de celles où nous sommes accoutumés de les voir; déjà, dans l'arrangement des tribus, nous avons pu voir que des affinités consacrées par un usage pour ainsi dire général, sont tout à fait brisées, et je dois dire avec justice, car tous ceux qui ont approfondi un peu la matière le savent, il n'y avait dans notre classification que trop de traces de cette mesquine étude que l'on peut l'appeler l'entomologie



de clocher, c'est-à-dire que les premiers auteurs s'étaient mis en route avec l'insoutenable préjugé que notre petite Europe allait nous offrir l'abrégé exact de la nature du globe, et la possibilité de formuler par elle seule le système de cette nature.' The arrangement, however, has been adopted in Leconte and Horn's edition\* of Leconte's work on the classification of American Coleoptera already noticed, and in most of the later European catalogues. There still remains the task of amalgamating the groups of all countries in one list.

Another attempt at the classification of the *Carabidæ* has been made by M. des Gozis.† This is based principally on the presence or absence of setigerous pores in the pronotum. He distributes the genera into six sections, but this arrangement appears to bring together genera incongruous in other respects, *Oodini*, *Omophronini*, *Dryptini* and *Zabrinini* in the first group; *Brachynini* and *Harpalini* in the second group; whilst the fifth group contains an agglomeration of apparently widely distinct genera.

Mr. Sharp, in a paper‡ on the *Carabidæ*, quotes Leconte's remarks already noticed, and adds:—'The learned and energetic American expert had himself contributed greatly, probably as much or more than any other of the authors he mentions, to the rational system of classification he describes, and had no doubt done so at the expense of great labour and time, but the lapse of time has not altogether justified his expression of reliance as to the permanency of the results then reached. Duval, Chaudoir, C. J. Thomson and others have worked, since Leconte, at the classification of these insects, and each has contributed more or less to our knowledge, and has thus induced change. The genera of a large number of groups have been entirely remodelled by Chaudoir; while of the larger groups it may be truly said that at present but little accord exists as to their limits and arrangement, except in the case of certain comparatively small and isolated groups.'

Mr. Sharp further remarks:—'Indeed I am, myself, of opinion that classification of the groups superior in complexness to genera is at present (1883) so extremely far from approximation to the actual facts, and that these groups will thus probably in future assume a totally different form, that we should do well to refrain from giving them names at all,

\* 'Classification of the Coleoptera of North America,' by J.L. Leconte and G. H. Horn, in Smithsonian Miscellaneous Collections, 1883; and separate, 1888. Bibliography of the American Carabidæ, *ib.*, p. 536.

† 'Mémoire sur les pores sétigères prothoraciques dans la tribu des Carnivores,' in MT Schwe. Ent. Ges. vi, 1882, p. 265.

‡ Trans. Ent. S. Lond., 1883, p. 61. 'On the classification of the *Adephaga*, or carnivorous series of the Coleoptera.'



and contenting ourselves with the simple method of numbering the tribes or groups, instead of naming them.' As pointed out by Mr. Sharp, the number of tribes, or groups of genera, in each sub-family is greater than those given by Dr. Horn, whose investigations refer mainly to the species of North America. Mr. Sharp also remarks that, in the case of many of the tribes adopted by Dr. Horn, that writer makes use of the same names for them as have been used by his predecessors, although giving to those names a widely different extension or meaning. Though this is the usual plan, it gives to classifications a false appearance of accord and permanence, and also, by giving to the names the sanction of long use, tends to make them appear in the eyes of many of more importance than they are in fact. With these remarks I thoroughly concur, and any one who has had to study the literature of the *Carabidæ*, will, I am sure, endorse them. In preparing this paper, I have found that it would be possible almost to count as a group\* each genus, and I consider the best course is to arrange the genera as near as possible in the groups that have been established with some authority, and then to give fairly full references†, which those who have the knowledge and material can hereafter work out for themselves. I possess neither the time nor the material necessary for this purpose, and my object is merely to help others by giving a list of the recorded species from the Oriental Region.‡

Bates H. :—

On the group *Pericalini* :—Ent. Mon. Mag., vi. 1869. p. 69.

" " *Lachnophorini* :—*l.c.* viii. 1871. p. 29.

Biologia Centrali-Amér., Col. i (i), 1881.

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'Observations entomologiques,' in Mémoires de l'Académie Impériale des Sciences, Littérature et Beaux-arts, classe de Physique et de Mathématique, pour les années, 1809-10. Turin, 1809, p. 21 : *ibid.*, 1813 p. 442. [My copy does not contain the *tab. syn.* quoted by authors.]

Brulle, A. :—

Histoire naturelle des Insectes, par M M Audouin et Brullé. (Coléoptères). iv-vi. Paris, 1834.

\* Let any one compare the notes in the Zoological Record for a series of years, and he will at once appreciate the extent of the existing confusion, which the *Zoologischer Jahresbericht* got over by giving the genera in alphabetical order.

† A list follows of the principal papers of Chaudoir, Putzeys, Bates, and others on classification.

‡ A few extra-Oriental species, marked by an asterisk, are given from the collection made by the Yarkand Mission of which the types are in the Indian Museum. The species identified in the Indian Museum have the precise locality in angular brackets.

Chaudoir, M. le Baron de :—

*Bulletin de la Société Impériale des Naturalistes, Moscou.*

- 1.—Genres nouveaux et espèces nouvelles des *Carabiques*, *ib.* :—x (3), 1837, p. 1 ; (7) p. 3.
- 2.—Tableau d'une nouvelle subdivision du genre *Feronia*. *ib.*, xi (1), 1838, p. 1.
- 3.—Genres nouveaux *ib.*—xv, 1842, p. 832 ; xvi, 1843, p. 383, 671.
- 4.—Trois Mémoires sur la famille des *Carabiques* : *ib.*, xvii, 1844, p. 415.
- 5.—Note sur le groupe des *Stomides* : *ib.*, xix (2), 1846, p. 511.
- 6.—Mémoire sur la famille des *Carabiques*, I., *ib.*, xxi (1), 1848, p. 1 :—Odacanthini (p. 26), Pericalus (111). II, *ib.*, xxiii (1), 1850, p. 1 :—Drypta, p. 33, Anthia (41), Callida (51), Catascopus (349), Coptodera (356), Pristonychus (379), Dicranoncus (392), Callistus (394), Lasiocera (402), Omophron (424). III, *ib.*, xxv (1), 1852, p. 1 :—Triplogenius (p. 71). IV, *ib.*, xxvii (1), 1854, p. 112, 279 :—Ozaenini (p. 279). V, *ib.*, xxviii (1), 1855, p. 1 :—Scaritini (p. 5). VI, *ib.*, xxix (3), 1856, p. 187 :—Chlaenini, xxx (3), 1857, p. 1.
- 7.—Materiaux pour servir à l'étude des *Cicindelètes* et des *Carabiques*, *ib.*, xxxiii (4), 1860, p. 269 (*Cicindelidæ*) : xxxiv (1), 1861, p. 491 :—Cychrini (p. 493), Carabini (502), Nebrini (504), Opisthius (505), Hiletini (506), Dendrocellus (545), Drypta (546), Galerita (551), Anthia (561) : *ib.* (2), p. 335 :—Revision de l'ancien genre *Panagæus* :—Epicosmus (p. 335), Peronomerus (354), Euschizomerus (354). *ib.*, xxxv (4), 1862, p. 275 :—Casnonia (p. 275), Dicraspeda (300), Helluodes (302), Physotocraphus (303), Pogonoglossus (304), Zuphium (310).
- 8.—Essai monographique sur le genre *Abacetus*, xlii (1), 1869, p. 355.
- 9.—Monographie des *Graphiptérides*, *ib.*, xliii (1), 1870, p. 281.
- 10.—Monographie des *Lébiides*, *ib.*, xliii (2), 1870, p. 111 :—Dietya (p. 123), Nematopeza (146), Lebia (162) : *ib.*, xlv (1), 1871, p. 1 :—Stephanas (p. 55).
- 11.—Observations sur quelques genres des *Carabiques*, *ib.*, xlv (1), 1872, p. 382 :—Callistomimus (p. 382), Casnonia (397).
- 12.—Materiaux pour servir à l'étude des *Feroniens* :—xlvi (2), 1873, p. 85 ; *ib.*, xlviii (1), 1874, p. 1 :—Aepsera (p. 29).
- 13.—Etude monographique des *Masoréides*, et des *Tetragonodérides*, *ib.*, li (3), 1876, p. 1 :—Caphora (p. 8), Masoreus (11), Cyclosomus (27), Tetragonoderus (33), Mnuphorus (69), Tilius (71).
- 14.—Monographie des *Siagonides*, *ib.*, 1 (1), 1876, p. 62 :—Siagona (p. 76), Coscinia (115).
- 15.—Genres nouveaux et espèces inédites des *Carabiques* :—*ib.*, liii (3), 1878 p. 1 :—Rhathymus (p. 7), Tropidocerus (9), Abacetus (25), Triplogenius (31).
- 16.—Essai monographique sur les *Morionides*, *ib.*, lv (1), 1880, p. 317 :—Morio, Morionidius.

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- 1.—Genres et espèces des *Carabiques* nouveaux :—iv, 1837, p. 429.
- 2.—Monographie du genre *Colpodes*, Macleay :—(3 s.) vii, 1859, p. 287.
- 3.—Revision des genres *Dicranoncus* and *Colpodes* ; (5 s.) viii, 1878, p. 275.
- 4.—Monographie des *Oodides* :—(6 s.) ii, 1882, p. 317, 485.

*L'Abeille.*

- 1.—Monographie du genre *Pœcilus* :—xvi, 1876, p. 1.  
*Annales de la Société Entomologique de Belgique.*
- 1.—Révision du groupe des *Oxénides*, xi, 1867-68, p. 43 :—*Picrus* (p. 45), *Itamus* (51), *Eustra* (71).
- 2.—Révision des *Trigonotomides*, l. c., p. 151 :—*Triplogenus* (p. 154), *Trigonotoma* (158).
- 3.—Mémoire sur les *Thyreoptérides*, xii, p. 113 :—*Brachichila* (p. 123), *Tantillus* (126), *Sinurus* (129), *Mormolyce* (131), *Serrimargo* (134), *Peripristus* (135), *Thyreopterus* (141), *Miscelus* (152), *Holcoderus* (153), *Catascopus* (158), *Pericallus* (158).
- 4.—Mémoire sur les *Coptodérides*, ib., p. 163 :—*Coptodera* (p. 163), *Lioptera* (208), *Moctherus* (240), *Dolichoctis* (245), *Brachyctis* (252).
- 5.—Essai monographique sur le groupe des *Pogonides*, ib., xiv, 1870-71, p. 21 :—*Pogonus* (p. 23), *Patrobus* (40).
- 6.—Essai monographique sur les *Orthogoniens*, ib., xiv, 1870-71, p. 95 :—*Orthogonius* (p. 98), *Hexachaetus* (124), *Actenoncus* (126).
- 7.—Essai monographique sur les *Drimostomides* et les *Cratocérides*, ib., xv, 1872, p. 5 :—*Drimostoma* (p. 9), *Stomonaxus* (13), *Diceromerus* (15).
- 8.—Monographie des *Callidides*, ib., xv, 1872, p. 97 :—*Callida* (p. 103), *Crossoglossa* (177), *Bothynoptera* (181), *Endynomena* (186).
- 9.—Monographie des *Brachynides*, ib., xix, 1876, p. 11 :—*Pheropsophus* (p. 16), *Brachynus* (49), *Styphlomerus* (87), *Mastax* (97).
- 10.—Essai monographique sur les *Panagéides*, ib., xxi, 1878, p. 83 :—*Brachyonychus* (p. 86), *Epicosmus* (104), *Eudema* (133), *Microcosmus* (139), *Dischissus* (149), *Euschizomerus* (157), *Peronemerus* (162), *Trichisia* (164).
- 11.—Monographie des *Scaritides* ib., xxii, 1879, p. 124-181 ; xxiii, 1880, p. 5-130 :—*Oxylobus* (p. 129), *Coptolobus* (159), *Distichus* (p. 44), *Scarites* (63.)

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- 1.—Monographie des *Chlénien*s :—viii, 1876, p. 5 :—*Chlaenius* (p. 10), *Hololius* (290), *Rhopalistes* (291).
- 2.—*Féronides* from Australia :—vi, 1874, p. 568 : *Harpaliens* from Australia, xii, 1878, p. 475.

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A list of the genera and species described by this author (1834—1867) will be found in the Supplement to vol. iv of the Horae Societatis entomologicae Rossicae. St. Petersburg, 1868.

Énumération des nouvelles espèces des Coléoptères rapportées de ses voyages iv, Bull. Mosc., xxxvii (3), 1864, p. 171, 297 ; *ib.*, xxxviii (4), 1865, p. 227.

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2.—Postscriptum ad *Clivinidarum* Monographiam, *l. c.*, xviii, 1862.

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4.—Supplément à la Révision générale des *Clivinides*, *l. c.*, xi, 1867-68, p. 1-22.

5.—Deuxième supplément à la même, *l. c.*, xvi, 1873, p. 10.

6.—Monographie des *Calathides*, *l. c.*, xvi, p. 19.

7.—*Brososoma*, Carabidum genus novum. Brussels, 1846.

8.—Les Broscoïdes, Stettin Ent., Zeit., 1868, p. 304 :—*Brososoma*, p. 253.

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**OMOPHRONINI :—**

Lacordaire, Gen. Col., i, 1854, p. 41 : Horn, Gen. Carab., p. 105 : Leconte and Horn, Class. Col., 1883, p. 6.

**Genus OMOPHRON.**

Latreille, Hist. Nat. Ins., iii, 1802, p. 89 : Lacord., Gen. Col., i, p. 42 : Mun. Cat., p. 42 : Chaudoir, Rev. Mag. Zool., 1868, p. 54 : Bates, Biol. Centr. Amer. Col., i, p. 19.

*Epactius*, Schneider (1791), *teste* Bergr., Berlin, Ent. Zeits., 1834, p. 229.  
*Homophron*, Zool. Rec., 1875, p. 279.

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**Brettinghamae**, Pascoe, Jour. Ent., i, 1860, p. 38.

Hab. India.

**maculosus**, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 424.

Hab. N. India.

**pictus** (*Scolytus*), Wiedemann, Zool. Mag., ii (1), 1823, p. 69.

Hab. India, Bengal.

**vittatus** (*Scolytus*), Wiedemann, l. c., p. 69.

Hab. India, Bengal.

**CYCHRINI :—**

Horn, Gen. Carab., 1881, p. 107 : Leconte & Horn, Class. Col., 1883, p. 7.

[ M. Géhin (Cat. Carab., 1885) places the *Cychrini* with the *Carabini* which he describes as comprising three genera, designated sub-tribes by him, *Cychnus*, *Carabus* and *Calosoma*, each with numerous sub-divisions. M. Géhin writes :—" Tous les groupes que je viens d'examiner ont pour moi le même valeur systématique, ce sont des sous-genres des *Carabus*, *Calosoma* et *Cychnus*. Si dans le synopsis j'ai fait précéder leur nom des mots 'genre' ou 'sous-genre', c'est pour montrer le peu d'harmonie qui existe entre les entomologistes". For the reasons given by Dr. Horn (l. c. *supra*), the *Cychrini* are retained as a separate group, and I give the other names as subgenera or synonyms, except *Cryptolabus* and *Damaster* which appear to be well established genera].

**Genus CYCHRUS.**

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Latreille, Hist. Crust. & Ins., iii, 1802, p. 89 : Clairv., Ent. Helv., ii, 1806, p. 140,  
t. 22 : Lacord., Gen. Col., i, p. 50 : Mun. Cat., p. 47.

*Alpaeus*, Bonelli, Mém. Acad. Turin, 1809, p. 68.

*Holobia* (Leach), Stephens, Ill. Brit. Ent., iii, 1827, t. 103.

*Chaslii*, Fairmaire, Le Nat., viii, 1886, p. 223 : Ann. Soc. Ent. Fr., (6 s.) vi, 1886,  
p. 306.

Hab. China, Kiangsi.

- chinensis*, Bates, Ent. Mon. Mag., ix, 1872, p. 52; Trans. Ent. S. Lond., 1873, p. 236; Fairm. Ann. Fr., l. c. *supra*, p. 306.  
Hab. Yangtse Valley in China, Japan.
- Desgodinsi*, Oberthür, Nov. Col., i, 1883, p. 47.  
Hab. Darjiling.
- lividipes*, Fairmaire, Le Nat., viii, 1886, p. 223; Ann. Fr. l. c. *supra*, p. 306.  
Hab. China, Kiangsi.
- pulcherrima*, Bates, Trans. Ent. S. Lond., 1873, p. 236; Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 90.  
Hab. Yangtse Valley, Japan, Kiangsi.
- xanthacra*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 423.  
Hab. India, Simla.

#### ENCELADINI:—

Horn, Gen. Carab., p. 118.

#### Genus LUPERCA.

- Lap. de Casteln., Hist. Nat. Ins. Col., i, 1840, p. 63; Lacord., Gen. Col., i, p. 163; Mun. Cat., p. 162.  
*Holoscelis*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 438; *id.*, 50 (i), 1876, p. 71.
- laevigata*, (*Carabus*), Fabr., Spec. Ins., i, 1781, p. 304; Ent. Syst., i, p. 143; Syst. Eleuth., i, p. 124; Oliv., Ent., iii 36, p. 7, t. 2, f. 18; Herbst., Natursyst. Ins. Käfer. x, p. 256, t. 175, f. 6; Lacordaire, Gen. Col., Atlas, t. 6, f. 1: (*Enceladus*) Dejean, Spec., v, p. 474; Chaudoir, Bull. Mosc., 50 (i), 1876, p. 74; Dohrn, Stettin. Ent. Zeit., 1881, p. 309.  
*herculanea*, Lap. de Casteln., Et. Ent., i, 1834, p. 151.  
Hab. India, Bengal [*Ind. Mus.*, Ceylon.]

#### SCARITINI:—

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxii, 1879, p. 124; xxiii, 1880, p. 5; Horn, Gen. Carab., p. 119; Leconte & Horn, Class. Col., p. 16.

Dr. Horn divides the tribe, so far as he deals with it, into two sections which he names *Scarites* (*Pasimachus* and *Scarites*), and *Clivinae* (*Dyschirius*, *Clivina*, *Ardistomis*). Others make four sections, of which the genera occurring in the Oriental Region are:—

*Pasimachina*:—*Mouhotia*.

*scaritina*:—*Oxylobus*, *Haplogaster*, *Scaritoderus*, *Coptolobus*, *Distichus*, *Scarites*.

*scapterina*:—*Scapterus*, *Thibops*, *Systemognathus*, *Oxygnathus*, *Dacca*.

*Clivinina*:—*Dyschirius*, *Clivina*, *Coryza*, *Aeneus*, *Ardistomis*, (Putzeys, Rév. Gen., Ann. Soc. Ent. Belg., x, 1866, p. 1),

#### Genus MOUHOTIA.

Lap. de Casteln., Rev. Mag. Zool., xiv, 1862, p. 305; Mun. Cat., p. 180.

*convexa*, Lewis, Ent. Mon. Mag., xix, 1883, p. 193; Waterhouse, Aid, t. 129, f. 1  
Hab. Laos.

- gloriosa*, Lap. de Casteln., Rev. Mag. Zool., 1862, p. 306; Lucas, Bull. Soc. Ent. Fr., (5 s) vii, p. clxxiii.  
*Midas*, Schaum, Proc. Ent. S. Lond., 1862, p. 94.  
 Hab. Laos.

### Genus **OXYLOBUS**.

- Chaudoir, Bull. Mosc., xxviii (i), 1855, p. 5; *id.*, *Monograph*, Ann. Soc. Ent. Belg. xxii, 1879, p. 129; Mun. Cat., p. 181.  
*alveolatus*, Chaudoir, Mon. l. c., p. 134.  
 Hab. India.  
*asperulus*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 58; *Mon.*, p. 133.  
 Hab. Ceylon.  
*costatus*, Chaudoir, *Mon.*, p. 134.  
 Hab. Malabar, Colombo (*Bates*).  
*designans* (*Scarites*), Walker, Ann. Mag. N. H., (3 s) ii, 1858, p. 203; Bates, l. c., (5 s) xvii, p. 210.  
 ? = *sculptilis*, Westwood, *q. v.*  
 Hab. Ceylon.  
*foveiger*, Chaudoir, *Mon.*, p. 133.  
 Hab. India.  
*lateralis* (*Scarites*), Dejean, Spec., i, 1825, p. 400; Chaud., Bull. Mosc., xxviii (i), 1855, p. 8; *id.*, *Mon.*, p. 131.  
 Hab. India, Coromandel.  
*punctatosulcatus*, Chaudoir, Bull. Mosc., xxviii (i), 1855, p. 6; *Mon.*, p. 131.  
 Hab. Nepal.  
*quadricollis*, Chaudoir, Bull. Mosc., l. c., p. 7; *Mon.*, p. 130.  
 Hab. India, Nilgiris, Colombo (*Bates*).  
*sculptilis*, Westwood, Arc. Ent., i, 1843, p. 88, t. 23, f. 1; Chaudoir, *Mon.*, p. 133.  
 Hab. India, Coromandel [*Ind. Mus.*, Utakamand.].

### Genus **HAPLOGASTER**.

- Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxii, 1879, p. 149.  
*humeralis*, Putzeys, Chaudoir, *Mon.*, l. c., p. 151.  
 Hab. Madras.  
*ovatus*, Chaudoir, *Mon.*, l. c., p. 150.  
 Hab. N. India.

### Genus **SCARITODERUS**.

- Fairmaire, Bull. Soc. Ent. Fr., (6 s.) iii, 1883, p. lv, note.  
*Anomoderus*, Chaudoir, Ann. Soc. Ent. Belg., xxii, 1879, p. 156 (*nom. praec.*).  
*Anomophaenus*, Fauvel, Rev. d'Ent., i, 1882, p. 229 (*nom. praec.*).  
*Loyolæ*, Fairmaire, l. c. *supra*, p. lv.  
 Hab. India, Ramnad.

Genus **COPTOLOBUS.**

Chaudoir, Bull. Mosc., xxx (3), 1857, p. 59; *id.*, *Monograph*, Ann. Soc. Ent. Belg., xxii, 1879, p. 159: Mun. Cat., p. 182.

*Anodon*, Chaudoir, *Mon.*, *l.c.*, p. 160.  
Hab. Ceylon.

*glabriculus*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 60; *Mon.*, *l.c.*, p. 162: Mun. Cat., p. 182.

? *obliterans* (*Scarites*), Walker, Ann. Mag. N. H., (3 s.) ii, 1858, p. 203.

? *subsignans* (*Scarites*), Walker, *l.c.*, p. 203.

Hab. Ceylon, Nuwara Eliya, Horton Plains (*Bates*), Canton (*Putzeys*).

*Omodon*, Chaudoir, *Mon.*, *l.c.*, p. 161.

Hab. Ceylon, Colombo (*Bates*).

*taprobanae*, Chaudoir, *Mon.*, *l.c.*, p. 161.

Hab. Ceylon, Colombo, (*Bates*).

Genus **DISTICHUS.**

Motschulsky, Et. Ent., 1857, p. 96: Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxiii, 1880, p. 44: Bates, Biol. Centr. Amer., Col., i (i), p. 30.

*Scarites*, pt., Bonelli, Dejean *auct.*

*Taeniolobus*, pt., Chaudoir, *olim.*

*dicaelus*, Chaudoir, *Mon.*, Ann. Soc. Ent. Belg., xxiii, 1880, p. 52.

Hab. Singapur.

*lucidulus*, Chaudoir, *Mon.*, *l.c.*, 57.

Hab. Dekhan, Rangoon, Siam.

*modestus*, Chaudoir, *Mon.*, *l.c.*, p. 57.

Hab. India.

*picicornis* (*Scarites*), Dejean, Spec., v, 1831, p. 493: Chaudoir, *Mon.*, *l.c.*, p. 56.

*troglodytes*, Erichson, Wieg. Arch., 1843, p. 214.

? var. *minor*, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 389: Ann. Mag. N. H., (2 s.) xix, 1857, p. 244.

Hab. Ceylon, Colombo, Dekhan, W. Africa, Zanzibar.

*planus* (*Scarites*), Bonelli, Mém. Acad. Turin., 1813, p. 470: Dejean, Spec., i, p. 395;

*id.*, Ic. Col. Eur., i, t. 21, f. 3: Klug, Symb. Phys., Dec. iii, t. 23, f. 5: Chaudoir *Mon.*, *l.c. supra*, p. 53.

? *bisquadripunctatus* Klug, Peters Reise Mossamb., v, 1862, p. 153.

*punctatostriatus*, Redtenb., Russegger Reise., p. 979.

*seapunctatus*, Ménétrics, Cat. Rais., i, 1832, p. 103.

var *nitidus*, Dejean, Spec. v, 1831, p. 484.

Hab. Mediterranean and Caspian regions, N. India.

*puncticollis*, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 47; *Mon.*, *l.c. supra*, p. 55

Hab. N. India.

*striaticeps*, Chaudoir, *Mon.*, *l.c.*, p. 52.

Hab. India.



Genus **SCARITES.**

- Fabricius, Ent. Syst., i, 1792, p. 94; Syst. Eleuth., i, p. 123 (*Attelabus*, DeGeer, *neo* Linn.): Lacord., Gen. Col., i, p. 194: Schmidt Goebel, Faun. Col. Birm., p. 93: Mun. Cat. p. 184: Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 5; *id.*, *Monograph*, Ann. Soc. Ent. Belg., xxiii, 1880, p. 63: Motschulsky, Et. Ent., 1857, p. 93.  
*Broscomorphus*, Motsch., Et. Ent., 1857, p. 96: Chaud., *Mon.*, p. 66.  
*Glyptomorphus*, Motsch., *l. c.*, p. 95.  
*Harpalites*, Motsch., *l. c.*, p. 95: Chaud., *Mon.*, p. 67.  
*Parallelomorphus*, Motsch., *l. c.*, p. 96: Käf. Russl., 1850, t. v: Chaud., *Mon.*, p. 65.  
*Paramecomorphus*, Motsch., Et. Ent., 1857, p. 96: Chaud., *Mon.* p. 65.  
*Scallophorites*, Motsch., *l. c.*, p. 95: Chaud., *Mon.*, p. 67.  
*Stigmapterus*, Motsch., *l. c.*, p. 95.  
*Taeniolobus*, pt, Chaudoir, *olim*: Mun. Cat., p. 183.
- acutidens*, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 98; *id.*, *Mon.*, p. 83.  
 Hab. E. coast China, Chusan.
- barbarus*, Dejean, Spec., i, 1825, p. 388: Chaud., *Mon.*, p. 96.  
 Hab. India, Dekhan.
- bengalensis*, Dejean, Spec., ii, 1826, p. 468: Chaud., Bull. Mosc., xxvii (i), 1855, p. 79; *id.*, *Mon.* p. 89.  
 Hab. N. India, Bengal.
- Boysii*, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 57; *Mon.*, p. 107.  
 Hab. N. India.
- capito*, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 92, 108; *Mon.*, p. 95.  
 ? = *Selene*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 94 [descr. incomp.].  
 Hab. Burma, Rangoon, N. India.
- ceylonicus*, Chaudoir, *Mon.*, p. 85.  
 Hab. Ceylon, Galle, Colombo (Bates).
- cycloderus*, Chaudoir, *Mon.*, p. 112.  
 Hab. India.
- denticulatus*, Chaudoir, *Mon.*, p. 98.  
 Hab. Cochinchina.
- dyschromus*, Chaudoir, Bull. Mosc., xxvii (i), 1855, p. 78; *id.*, *Mon.*, p. 82.  
 Hab. N. India.
- estriatus*, Fairmaire, Ann. Soc. Ent. Belg., 1887, p. 93.  
 Hab. China, Fukien.
- Geryon*, Hope, Gray's Zool. Misc., 1831, p. 21: ? MacLeay, Trans. Ent. Soc. N. S. Wales, i, 1863, p. 68 (Australia).  
 Hab. Nepal.
- inconspicuus*, Chaudoir, Bull. Mosc., *l. c. supra*, p. 82; *Mon.*, p. 97.  
 Hab. N. India [*Ind. Mus.*, Jhelam Valley].
- indus*, Olivier, Ent., iii, 36, 1795, p. 9, t. 1, f 2 a-b: Dejean, Spec., i, p. 395: MacLeay, Annul. Javan., p. 35: Chaud., *Mon.*, p. 102.  
 Hab. India, Ceylon, Colombo [*Ind. Mus.*, Bengal, Tinpahár, Sâhibgunj?].
- liopterus*, Chaudoir, *Mon.*, p. 87.  
 Hab. N. India.

*longiusculus*, Chaudoir, *Mon.*, p. 86.

Hab. Philippines.

*mancus*, Bonelli, *Mém. Acad. Turin*, 1813, p. 473 : Dejean, *Spec.*, i, p. 394 ; Chaudoir, *Mon.*, p. 102.

Hab. India, Java, Philippines.

*opacus*, Chaudoir, *Bull. Mosc.*, xxvii (i), 1855, p. 88 ; *id.*, *Mon.*, p. 103.

? = *parvus*, Wiedemann, *Zool. Mag.*, ii (i), 1823, p. 37.

Hab. N. India, Bengal.

*orthomous*, Chaudoir, *Bull. Mosc.*, xxvii (i), 1855, p. 55 ; *id.*, *Mon.*, p. 83.

Hab. Himálaya.

*pacificus*, Bates, *Trans. Ent. S. Lond.*, 1873, p. 238 : Chaud., *Mon.*, p. 101.

Hab. Formosa, Japan.

*parallelus*, Dejean, *Spec.*, i, 1825, p. 382 : Chaudoir, *Mon.*, p. 86.

Hab. Java.

*praedator*, Chaudoir, *Mon.*, p. 97.

Hab. Burma, Rangoon.

*punctum*, Wiedemann, *Zool. Mag.*, ii (i), 1823, p. 38 : Chaudoir, *Mon.*, p. 127.

Hab. Bengal.

*semicircularis*, MacLeay, *Annul. Javan.*, 1825, p. 24 : Chaudoir, *Mon.*, p. 127.

? = *punctum* Wiedemann, *q.v.*

Hab. Java

*semirugosus*, Chaudoir, *Bull. Mosc.*, xxvii (i), 1855, p. 90 ; *Mon.*, p. 82.

*rugipennis*, Chaudoir, *Bull. Mosc.*, *l.c.*, p. 82.

Hab. Bengal, Bangkok, Philippines.

*similis*, Chaudoir, *Mon.*, p. 83.

Hab. ? E. Asia.

*subnitens*, Chaudoir, *Bull. Mosc.*, xxvii (i), 1855, p. 87 ; *Mon.*, p. 103.

Hab. N. India.

*subproductus*, Chaudoir, *Mon.*, p. 90.

Hab. Siam, Bangkok.

*sulcatus*, Oliv., *Ent.* iii, 36, 1795, p. 7. t. 1, f. 11 ; Dejean, *Spec.*, i, p. 375 : Chaud., *Mon.*, p. 80.

*chinensis*, Erichson, *Nova Acta Leop. Carol. Nat.*, xvi, Supp. i, 1832, p. 220.

Hab. India, Macao, Formosa [*Ind. Mus.*, Sikkim, Assam ?].

### Genus **SCAPTERUS.**

Dejean, *Spec.*, ii, 1826, p. 471 : Lacord., *Gen. Col.*, i, p. 197 : *Mun. Cat.*, p. 188.

Putzeys, *Révision Clivinides*, *Ann. Soc. Ent. Belg.*, x, 1866, p. 7.

*figuloides*, R. Gestro, *Ann. Mus. Civ. Gen.*, xviii, 1882, p. 301, fig.

Hab. Burma.

*Guerinii*, Dejean, *Spec.*, ii, 1826, p. 472 ; *Icon. Col. Eur.*, i, t. 22, f. 3 : Guérin, *l.c.*

*Règne Anim.*, t. 5, f. 3 a : Gray, *Griffith Anim. Kingd.*, *Ins.* ii, 1832, t. 8, f. 3.

Hab. India.

*riparius*, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 299, fig.

Hab. Burma, Minhla.

*sulcatus*, Putzeys, Mém. Roy. Soc. Liège, Postscr., 1863, p. 17 : ? Chaudoir, Rev. Mag. Zool. (2 s.), xv, 1863, p. 117.

Hab. N. E. India [*Ind. Mus.*, Sibságar, Assam].

### Genus **THLIBOPS**.

Putzeys, Ann. Soc. Ent. Belg., x, 1866, p. 9 : Mun. Cat., p. 188.

*crenata*, Chaudoir, Rev. Zool. (2 s.), xv, 1862, p. 118.

Hab. Cochín China.

*Dohrnii*, Chaudoir, *l. c.*, p. 118.

Hab. Java.

*puncticollis*, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 302.

Hab. Burma.

### Genus **OXYGNATHUS**.

Dejean, Spec., ii, 1826, p. 473 ; Icon. Col. Eur., i, t. 22. f. 5 : Lacord., Gen. Col., i, p. 198 : Mun. Cat., p. 190.

*elongatus* (*Scarites*), Wiedemann, Zool. Mag., ii (i), 1823, p. 38 : Dejean, Spec., ii, p. 475.

Hab. India.

### Genus **DACCA**.

Putzeys, Mém. Liège, Postscr., 1862, p. 63 : Mun. Cat., p. 191.

*forcipata*, Putzeys, *l. c.*, p. 68, t. 1, f. 41.

Hab. India.

### Genus **SPAROSTES**.

Putzeys, *Révision*, Ann. Soc. Ent. Belg., x, 1866, p. 27 : Mun. Cat., p. 192.

*brevicollis*, Putzeys, *l. c.*, p. 27.

Hab. N. China, ? Canton.

*striatulus*, Putzeys, *l. c.*, p. 29.

Hab. India, Siam.

### Genus **DYSCHIRIUS**,

Bonelli, Mém. Acad. Turin., 1813, p. 483 : Lacord., Gen. Col., i, p. 202 : Mun. Cat., p. 193 : Putzeys, *Monograph* Mém. Liège., ii, sep. 1846, p. 4 ; *ib.*, Révision générale, Ann. Soc. Ent. Belg., x, 1866, p. 32 ; Suppt., *ib.*, xi, 1868, p. 7 ; xvi, 1873, p. 10.

*Acephorus*, Leconte, Ann. Lyc. Nat. Hist., New York, v, 1851, p. 194.

*Phreoryctes*, Schmidt Goebel, Faun. Col. Birm., 1846, t. 3, f. 6.

*Reicheia*, Sauley, Ann. Soc. Ent. Fr., (4 s) ii, 1862, p. 285 : Putzeys, *l. c.*, p. 39 : Mun. Cat., p. 193.

*Spelaeodytes*, Müller, Wien. Ent. Monats., vii, 1863, p. 23.

*binodosus*, Putzeys, O. R. Ent. Belg., xxi, 1878, p. clxxiii.

Hab. Calcutta.

- daimiellus*, Bates, Trans. Ent. S. Lond., 1873, p. 241.  
Hab. Yangtse Valley, Japan, Nagasaki.
- debilis*, Schmidt Goebel, Faun. Col. Birm., 1846, t. 3, f. 6: Putzeys, *Rév.*, Ann. Soc. Ent. Belg., x, 1867, p. 97; *id.*, C. R. Ent. Belg., 1878, p. clxxiv.  
*interpunctatus*, Putzeys, *Rév. l.c.*, p. 97.  
*pusillus* (*Phreoryotes*), Schmidt Goebel: Putzeys, *Rév.*, p. 97. (*nec*. Dejean).  
Hab. Burma, N. India.
- Doriae*, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 14.  
Hab. Borneo, Sarawak.
- fusus*, Putzeys, C. R. Soc. Ent. Belg., xxi, 1878, p. clxxii.  
Hab. Calcutta.
- hispidulus*, Putzeys, *Rév.*, *l.c.*, p. 98.  
Hab. Siam.
- impunctatus*, Putzeys, Ann. Soc. Ent. Belg., xi, 1868, p. 10.  
? = *debilis*, Schmidt Goebel, *q. v.*  
Hab. Siam, Bangkok.
- indicus*, Putzeys, *Rév.*, *l. c.*, p. 91.  
Hab. N India.
- nitens*, Putzeys, C. R. Ent. Belg., xxi, 1878, p. clxxiii.  
Hab. Calcutta.
- ordinatus*, Bates, Trans. Ent. S. Lond., 1873, p. 240.  
Hab. Japan, Ceylon, Kandy.
- orientalis*, Putzeys, *Rév.*, p. 92: Bates, Trans. Ent. S. Lond., 1873, p. 241.  
Hab. Hongkong, Japan.
- ovicollis*, Putzeys, Ann. Soc. Ent. Belg., 1873, p. 14.  
Hab. Shanghai.
- porosus*, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xl.  
Hab. Burma.
- rugifer*, Putzeys, *l.c.*, C. R., 1878, p. clxxiii.  
Hab. Calcutta.
- Schmidtii*, Putzeys, *l.c.* 1877, p. xli.  
Hab. Calcutta.
- stenoderus*, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 13.  
Hab. Shanghai.
- verticalis*, Putzeys, *l.c.* C. R., 1878, p. clxxii.  
Hab. Calcutta.

### Genus **CLIVINA**.

- Latreille, Consid. génér., 1810, p. 156: Lacord., Gen. Col., i, p. 204: *Monograph*, Putzeys, Mém. Liège, ii, 1846; *Révision générale*, *id.*, Ann. Soc. Ent. Belg., x, 1866, p. 107: Mun. Cat., p. 198: Horn, Gen. Carab., p. 121: Bates, Biol. Centr. Amer., Col., i (i), p. 32.
- Eupalamus*, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 101.

- advena*, Putzeys, *Révision*, 1866, p. 123.  
Hab. India.
- agona*, Putzeys, *Révision*, 1866, p. 131.  
Hab. Siam.
- anceps*, Putzeys, *Mém. Liège*, Postscr., 1862, p. 50; *id.*, *Révision*, p. 124.  
Hab. India, Dacca.
- angularis*, Putzeys, *Révision*, 1866, p. 122.  
Hab. India.
- assamensis*, Putzeys, *Mon.*, *Mém. Liège*, ii, 1846, p. 584, sep. p. 66; *id.*, Postscr., p. 35; *Révision*, p. 108.  
Hab. Assam.
- attenuata*, Herbst, *Natursyst. Ins.*, Käfer, x, 1806, p. 264, t. 176, f. 7: Putzeys, *Révision*, p. 110.  
*melanaria*, Putzeys, *Mon.*, 1846, p. 586, sep., p. 68.  
*picipes*, Bonelli, *Mém. Acad. Turin*, 1813, p. 481: Dejean, *Spec.*, i, p. 416: Putzeys, *Mém. Liège*, 1846, p. 623; *id.*, Postscr., 1863, p. 51.  
Hab. India, Bengal, Assam.
- bengalensis*, Putzeys, *Mon.* 1846, p. 603, sep., p. 85; *id.*, *Révision*, p. 137.  
Hab. Bengal.
- brevior*, Putzeys, *Révision*, 1866, p. 126.  
Hab. Burma, Rangoon.
- brunnescens*, Motsch., *Bull. Mosc.*, xxxiv (i), 1861, p. 101.  
Hab. Ceylon.
- capitata*, Putzeys, *Révision*, 1866, p. 122.  
Hab. India.
- castanea*, Westwood, *Proc. Zool. S. Lond.*, 1837, p. 128: Putzeys, *Révision*, p. 131, note.  
Hab. Philippines, Manilla.
- cordicollis*, Motsch., *Bull. Mosc.*, xxxiv (i), 1861, p. 102.  
Hab. Ceylon.
- divaricata*, Putzeys, *Révision*, 1866, p. 122.  
Hab. India. [*Ind. Mus.*?]
- dolens*, Putzeys, *Ann. Soc. Ent. Belg.*, xvi, 1873, p. 15.  
Hab. Shanghai.
- elongatula*, Nietner, *Journ. As. Soc. Beng.*, xxv, 1856, p. 390: *Ann. Mag. N. H.*, (2 s.) xix, 1857, p. 245: Putzeys, *Révision*, p. 123.  
Hab. Ceylon, Colombo.
- extensicollis*, Putzeys, *Mon.* 1846, p. 601; *id.*, *Révision*, p. 115.  
Hab. Java.
- foveicollis*, Putzeys, *Mém. Liège*, Postscr. 1863, p. 61; *id.*, *Révision*, p. 133.  
Hab. China.
- fulvaster*, Motsch., *Bull. Mosc.*, xxxiv (i), 1861, p. 101.  
Hab. Ceylon.



- grammica*, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xi.  
Hab. Calcutta.
- Heiferli*, Putzeys, *Révision*, 1866, p. 126.  
Hab. India.
- humeralis*, Putzeys, Mém. Liège, Postscr. 1863, p. 48 ; *id.*, *Révision*, p. 125.  
Hab. Sumatra.
- humilis*, Morawitz, Beitr. Käfer-fauna Ins. Jesso, i, 1863, p. 22 : Bates, Trans. Ent. S. Lond., 1873, p. 238.  
*vulgivaga*, Bohemann, Freg. Eug. Raza, Col., 1858, p. 9.  
Hab. China, Hongkong, Yangtse Valley, Japan.
- hydropica*, Putzeys, *Révision*, 1866, p. 121.  
Hab. N. India [*Ind. Mus.*—?].
- indica*, Putzeys, *Mon.*, 1846, p. 535, sep., p. 69 ; *id.*, Postscript, p. 35 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 72.  
*rugosifrons*, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 390 : Ann. Mag. N. H., (2s.) xix, 1857, p. 245.  
Hab. Ceylon, Colombo, N. India, Dekhan.
- javanica*, Putzeys, *Mon.*, 1846, p. 529, sep., p. 74 ; *id.*, *Révision*, p. 124.  
Hab. Java.
- lata*, Putzeys, *Révision*, 1862, p. 131 : Bates, Trans. Ent. S. Lond., 1876, p. 3.  
Hab. India.
- lobata*, Bonelli, Mém. Acad. Turin., 1813, p. 481 : Dejean, Spec., i, p. 414 : Putzeys, *Mon.*, p. 599, sep., p. 81 ; *id.*, *Révision*, p. 120.  
Hab. Bengal.
- marginicollis*, Putzeys, *Révision*, 1866, p. 133.  
Hab. India.
- memnonia*, Dejean, Spec., v, 1831, p. 503 : Putzeys, *Mon.*, sep., p. 70 ; *id.*, *Révision*, p. 108.  
Hab. Java.
- moerens*, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 15.  
Hab. Shanghai.
- mordax*, Putzeys, Mém. Liège, Postscr., 1862, p. 67 : *Révision*, p. 133.  
Hab. India.
- niponensis*, Bates, Trans. Ent. S. Lond., 1873, p. 239.  
Hab. Yangtse Valley, Japan.
- Parryi*, Putzeys, Mém. Liège, Postscr., 1862, p. 60 ; *id.*, *Révision*, p. 130 : Bates, Trans. Ent. S. Lond., 1873, p. 233 ; *id.*, 1876, p. 3 ; *id.*, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 100.  
*clivinioides*, Schmidt Goebel, Faun. Col. Birm., 1846, t. 3, f. 4.  
Hab. India, Nilgiris, Bombay, Rangoon, Bhamo, Teintso, Ceylon, Colombo, Yangtse Valley, Japan.
- pluridentata*, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xlii.  
Hab. Calcutta.

- recta*, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203.  
Hab. Ceylon.
- rufipes*, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 102; Putzeys, *Révision*, p. 134.  
Hab. Ceylon, Colombo.
- sabulosa*, MacLeay, Annul. Javan., 1825, p. 24; Putzeys, *Révision*, p. 119 note, 124.  
Hab. Java.
- semicarinata*, Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xliv.  
Hab. Calcutta.
- siamica*, Putzeys, *Révision*, 1866, p. 124.  
Hab. Siam.
- striata*, Putzeys, *Mon.*, 1846, p. 592, sep., p. 74; *Révision*, p. 110.  
Hab. India, Coromandel.
- stricta*, Putzeys, Mém. Liège, Postscr., 1862, p. 49; *Révision*, p. 125.  
Hab. Java.
- sulcigera*, Putzeys, *Révision*, 1866, p. 110.  
Hab. Siam.
- tranquebarica*, Bonelli, Mém. Acad. Turin, 1813, p. 484.  
Hab. India.
- transversa*, Putzeys, *Révision*, 1866, p. 125.  
Hab. Siam.
- unicolor*, Herbst, Natursyst. Ins., Käfer, x, 1806, p. 265, t. 176, f. 9, *g.*  
Hab. India.
- Westwoodii*, Putzeys, *Révision*, 1866, 109.  
*castanea*, Putzeys, Mém. Liège, 1863, p. 35 (*nec* Westwood).  
Hab. India, Ceylon, New Guinea.

### Genus CORYZA.

- Putzeys, Ann. Soc. Ent. Belg., x, 1866, p. 194; Mun. Cat., p. 203.
- cariniceps* (Chandoir), Putzeys, *l. c.*, x, 1866, p. 196.  
Hab. N. India.
- maculata* (*Olivina*), Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 391; Ann. Mag. N. H., (2 s.) xix, 1857, p. 246; Putzeys, Ann. Soc. Ent. Belg., x, p. 196.  
Hab. Ceylon.
- Nietnerii*, Putzeys, *l. c.*, p. 196.  
*maculata*, Putzeys, Mém. Liège, Postscr., 1862, p. 51 (*nec* Nietner).  
Hab. India.

### Genus ANCUS.

- Putzeys, Ann. Soc. Ent. Belg., x, 1866, p. 197; Mun. Cat., p. 204.
- bicornutus*, Putzeys, Mém. Liège, 1863, p. 45; *l. c. supra*, p. 198.  
Hab. Siam.

Genus **ARDISTOMIS.**

Putzeys, Mém. Liège, ii, 1846, p. 686, sep., p. 118; *id.*, Ann. Soc. Ent. Belg., x, p. 200; Lacord., Gen. Col., i, p. 206; Mun. Cat., p. 204.

*paradoxa*, Putzeys, Ann. Soc. Ent. Belg., xi, 1863, p. 21.  
Hab. Siam, Bangkok.

Genus **PSILUS.**

Putzeys, C. R. Soc. Ent. Belg., xx, 1877, p. xlv.

*acutipalpis*, Putzeys, *l.c.*, p. xlv.  
Hab. Calcutta.

Sect. **HARPALINÆ BISETOSÆ**—Horn, Gen. Carab., 1881, p. 122; Leconte & Horn, Class. Col., p. 19.

**PANAGAEINI**:—Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 83; Horn, Gen. Carab., p. 126; Leconte & Horn, Class. Col., p. 22.

Genus **BRACHYONYCHUS.**

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxi, 1878, p. 86.  
*Epicosmus*, pt, Chaudoir, *olim*.

*Andersonii*, Bates Journ. Linn. S. Lond., xxi, 1887, p. 135.  
Hab. Mergui Archipelago (Elphinstone Island): [*Ind. Mus.* type].

*humeralus* (*Epicosmus*), Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 69; *Mon.*, p. 89.  
Hab. Cochin China.

*laevipennis*, Chaudoir, *Mon.*, p. 87.  
Hab. Siam, Cochin China.

*punctipennis*, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 305.  
Hab. Laos.

*sublaevis* (*Epicosmus*), Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 67; *Mon.*, p. 89.  
Hab. Cambodia, Cochin China.

Genus **EPICOSMUS.**

Chaudoir, Bull. Mosc., xvii, 1844, p. 512, note; *id.*, *l.c.*, xxxiv (2), 1861, p. 335; Ann. Soc. Ent. Belg., xxi, 1878, p. 104.

*Craspedophorus*, pt, Hope, Col. Man., i, p. 9; Lacord., Gen. Col., i, p. 210; Murray, Schaum.

*Eudema*, pt., Lap. de Casteln. Hist. Nat. Ins. Col., i, 1840, p. 137; Mun. Cat., p. 208.

*Isotarsus*, pt, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 217; Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 184.

*Panagaeus*, pt, Dejean *et auct.*

*basifasciatus*, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 115; Ann. Soc. Ent. Belg., xxi, 1878, p. 127.

? = *Saundersii*, Chaudoir, *g.v.*  
Hab. Laos, Cambodia.

- Castelnauii*, Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 112.  
*bifasciatus*, Lap. de Casteln., Et. Ent., 1834, p. 155 (*nec Fabr.*) : Chaudoir,  
 Bull. Mosc., xxxiv (2), 1861, p. 336.  
 Hab. India, Nilgiris, Coromandel, Colombo (Bates).
- Feae, Gestro, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 101.  
 Hab. Burma, Bhamo, Teintso, Promé.
- hexagonus, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 338 ; *id.*, Ann. Soc. Ent.  
 Belg., xxi, 1878, p. 114.  
 Hab. India [*Ind. Mus.*—?].
- hilaris, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 221, ♂ : Chaudoir, Bull.  
 Mosc., xxxiv (2), 1861, p. 345 ; *id.*, Ann. Soc. Ent. Belg., xxi, p. 110.  
 ? *geniculatus* (*Panagaeus*), Wied., Zool. Mag., ii (1), 1823, p. 56 : Chaud.,  
 Ann. Belg., *l.c. supra*, p. 112.  
*rufipalpis*, Laferté, *l.c. supra*, p. 221, ♀.  
 Hab. India, N. Bengal.
- laticollis, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 114 : Ann. Soc. Ent.  
 Belg., xxi, p. 125.  
 Hab. Cambodia, Laos.
- mandarinus (*Isotarsus*), Schaum, Ann. Soc. Ent. Fr., (3s.) 1853, p. 436 : Chaud.,  
 Ann. Soc. Ent. Belg., xxi, p. 113 : R. Gestro, Ann. Mus. Civ. Gen. xviii, 1882,  
 p. 304.  
 Hab. Hongkong, Burma.
- Mouhoti, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 69 ; Ann. Belg., *l.c. supra*,  
 xxi, p. 124.  
 Hab. Cambodia, Laos.
- notulatus, Fabr., Syst. Eleuth., i, 1801, p. 201 : Schönherr, Syn. Ins., i, p. 209 ;  
 Chaudoir, Ann. Belg., *l.c. supra*, p. 115.  
*elegans*, Dejean, Spec. ii, 1826, p. 290 : Laferté, *l.c. supra*, p. 221 ;  
 Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 432.  
 Hab. Bengal, Dekhan [*Ind. Mus.*].
- pubiger, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 337 : Ann. Belg., *l.c. supra*,  
 p. 122.  
 Hab. India.
- Saundersii, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 114 ; Ann. Belg., *l.c. supra*,  
 p. 125.  
 ? *basifasciatus*, Chaudoir, *q. v.*  
 Hab. Cambodia.

### Genus EUDEMA.

- Lap. de Casteln., pt, Hist. Nat. Col., i. 1840, p. 137 : Chaudoir, *Monograph*, Ann.  
 Soc. Ent. Belg., xxi, 1878, p. 133.  
*Pimelia* & *Carabus*, Fabricius : *Isotarsus*, pt, Laferté : *Panagaeus*, Dejean,  
 & *auct.*
- angulatum, Fabr., Spec. Ins., i, 1781, p. 302 ; Mant. Ins., i, p. 197 ; Ent. Syst., i,  
 p. 148 (*nec* Syst. Eleuth., i, p. 203) : Gmelin, ed., Syst. Nat., iv, p. 1963

- Olivier, Ent., iii, 35, p. 38, t. 7, f. 76; id., Enc. Méth., Carab., No. 41 :  
 Schönherr, Syn. Ins., i, p. 166 : Chaudoir, Bull. Mosc., xxxiv (2), 1861,  
 p. 336 : Schaum, Ann. Soc. Ent. Fr., (3 s.) i, 1853, p. 431.  
*fasciatum* (*Pimelia*), Fabr., Spec. Ins., i, p. 318; Mant. Ins., i, p. 209 ;  
 Ent. Syst., i, p. 104 : Schönherr, Syn. Ins., i, p. 166 : ? Chaudoir, Bull.  
 Mosc. xxxiv (2), 1861, p. 336 ; id., *Mon. l. c. supra*, p. 133.  
*tomentosum* (*Panagæus*), Vigors, Zool. Journ., i, 1825, p. 557, t. 20, f. 1 :  
 Dejean, Spec., ii, p. 284 : Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 431.  
 Hab. India, Nilgiris, Coromandel, Pondicherry [*Ind. Mus.*, Utakamand,  
 Orissa, China].
- sundaicum*, Oberthür, Notes Leyden Mus., v, 1883, p. 221.  
 Hab. E. Sumatra, Serdang.
- transversum* (*Epicosmus*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 332.  
 Hab. India.

### Genus LOROSTEMMA.

- Motschulsky, Bull. Mosc., xxxvii (3), 1864 p. 329 : Mun. Cat., p. 212.  
*Lorostema*, Motsch., *l. c. supra*.
- alutacea*, Motsch., *l. c. supra*, p. 330.  
 Hab. India, Tranquebar.

### Genus MICROCOSMUS.

- Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xxi, 1878, p. 139.  
*Craspedophorus*, pt, Murray, Schaum.  
*Isotarsus*, pt, Laferté.  
*Panagæus*, pt, Dejean & auct.
- flavopilosus*, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 348 : Ann. Belg., *l. c. supra*,  
 p. 142 : Bates, Trans. Ent. S. Lond., 1873, p. 243.  
 Hab. Bengal, Formosa, Japan.

### Genus DISCHISSUS.

- Bates, Trans. Ent. S. Lond., 1873, p. 243 : Chaud., Ann. Soc. Ent. Belg., xxi, 1878,  
 p. 149 ; Rev. Zool., (3s.) vi, p. 86.  
*Panagæus*, MacLeay, Lap. de Castelnau : *Craspedophorus*, pt, Murray,  
 Schaum : *Isotarsus*, pt, Laferté, Schaum.
- borneensis*, Frivaldsky, Term. füz., vi, 1883, p. 134.  
 Hab. Borneo.
- cereus* (*Panagæus*), MacLeay, *Annul. Javan.*, 1825, p. 12 : Chaud., Rev. Mag.  
 Zool., (2s.) xxi, 1869, p. 116 ; Ann. Soc. Ent. Belg., xxi, 1878, p. 150.  
 ? *versutus*, Lap. de Casteln., Et. Ent., 1834, p. 155.  
 Hab. Java.
- guttiferus*, Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 437 : Chaud., Ann. Soc.  
 Ent. Belg., xxi, 1878, p. 151.  
 Hab. Java.



*longicornis* (*Craspedophorus*), Schaum, Berlin. Ent. Zeits., 1863, p. 84 : Chaud., Ann. Soc. Ent. Belg., p. 153.

Hab. Nilgiris, Hongkong, N. China.

*quadrinotatus* (*Peronomerus*), Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 333 : Chaud., Ann. Soc. Ent. Belg., xxi, p. 152 : Bates, Trans. Ent. S. Lond., 1873, p. 244.

Hab. ? India, Japan.

### Genus **EUSCHIZOMERUS.**

Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 413 : Lacord., Gen. Col., i, p. 212 : Ann. Soc. Ent. Belg., xxi, 1869, p. 157 : Mun. Cat., p. 211.

*aeneipennis*, Chaudoir, Rev. Mag. Zool. (2s.), xxi, 1869, p. 118 ; *id.*, Ann. Soc. Ent. Belg., xxi, p. 159.

?=*denticollis*, Kollar, *g. v.*

Hab. Malacca.

*aeneus*, Chaudoir, Rev. Mag., *l. c.*, p. 118 : *id.*, Ann. Belg. *l. c. supra*, p. 160.

Hab. Dekhan.

*denticollis*, Kollar, Ann. Wien Mus., i, 1836, p. 334, t. 31, f. 2, a. b.

Hab. ? India.

*metallicus*, Harold, Stettin. Ent. Zeit. xi, 1879, p. 331.

Hab. India.

### Genus **PERONOMERUS.**

Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 440 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 162 : Mun. Cat., p. 211.

*fumatus*, Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 440 : Chaudoir, Ann. Soc. Ent. Belg., xxi, p. 162 : Bates, Trans. Ent. S. Lond., 1873, p. 245 ; *id.*, 1883, p. 234.

*aeratus*, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 354.

? *nigrinus*, Bates, Trans. Ent. S. Lond., 1873, p. 245 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 164.

Hab. India, Dacca, Hong-Kong, Japan [*Ind. Mus.*, Hong Kong].

### Genus **TRICHISIA.**

Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 331 : Chaudoir, *l. c.*, xlv (2), 1872, p. 283 ; *id.*, Ann. Soc. Ent. Belg., xxi, 1878, p. 164 : Mun. Cat., p. 211.

*Epicoemus*, pt., Chaudoir, *olim* : *Eudema*, pt, Lap. de Casteln.

*Isotarsus*, pt, Laferté, Schaum.

*cyanea* (*Isotarsus*), Schaum, Ann. Soc. Ent. Fr., (3s.) i, 1853, p. 439 : Chaudoir, Ann. Soc. Ent. Belg., xxi, p. 165.

*cyaneosceus*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 332.

Hab. India, Hong-Kong.

*morio* (*Isotarsus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 221, note 4 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 165.

Hab. Bengal, Dekhan.

**SIAGONINI**, Lacordaire, Gen. Col. i, 1854, p. 162 : Chaudoir, Bull. Mosc. 1 (i), 1876, p. 62 : Horn, Gen. Carab, p. 127.

### Genus **SIAGONA**.

Latreille, Gen. Crust. & Ins., i, 1806, p. 160 : Lacord., Gen. Col. i, p. 162 : Mun. Cat., p. 161 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 439 ; *Monograph ib.*, 1 (i), 1876, p. 76.

*atrata* Dejean, Spec., i, 1825, p. 360 : Chaudoir, *Mon.*, p. 85.  
Hab. India, Dekhan, Burma.

*Baconii*, Chaudoir, *Mon.*, p. 89.  
Hab. N. India, Burma.

*cinctella*, Chaudoir, *Mon.*, p. 95.  
Hab. Burma, Rangoon.

*depressa* (*Galerita*), Fabr., Ent. Syst. Suppt., 1798, p. 56 : *id.*, Syst. Eleuth., i, p. 215 : Chaudoir, *Mon.* p. 90 : Bedel, Ann. Soc. Ent. Fr., (6 s.) vii, 1887, p. 195.  
*europaea*, Dejean, Spec., ii, 1826, p. 468 ; Ic. Col. Eur., i, t. 20, f. 2 : Chaudoir, *Mon.*, p. 91 : ? Gray, Griffith An. Kingd. Ins., i, 1832, t. 8, f. 1.  
*Oberleitneri*, Dejean, Spec., v, 1831, p. 477 : Ic., i, t. 20, f. 3 : Peyron, Ann. Soc. Ent. Fr., (3 s.), 1858, p. 889.  
Hab. Mediterranean & Caspian regions, Senegal, Nubia, Persia, India [*Ind. Mus.*, China, Bengal, Sâhibganj].

*fesus* (*Galerita*), Fabr., Syst. Eleuth., i, 1801 p. 216 : Dejean, Spec., i, 1825, p. 363 : Chaudoir, *Mon.*, p. 94.  
*dorsalis*, Dejean, Spec. v, 1831, p. 477.  
Hab. India, Senegal.

*germana*, Chaudoir, *Mon.*, p. 96.  
Hab. Coromandel (? Pondicherry, Nilgiris).

*induta*, Chaudoir, *Mon.*, p. 98.  
Hab. India, Dekhan.

*obscuripes*, Chaudoir, *Mon.*, p. 86.  
Hab. Burma, Rangoon.

*plagiata*, Chaudoir, *Mon.*, p. 93.  
Hab. India, Dekhan.

*plana*, Bonelli, Mém. Acad. Turin, 1813, p. 458 : Bedel, Ann. Soc. Ent. Fr., (6 s.) vii, 1887, p. 195.  
*depressa*, Dejean, Spec., i, 1825, p. 361 (*nec* Fabr.) : Chaud., *Mon.*, p. 90.  
Hab. India, Dekhan, Coromandel.

*pubescens*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 439 ; *Mon.*, p. 95.  
var. *dilutipes*, Chaudoir, Bull. Mosc., *l. c.*, p. 440.  
Hab. N. India [*Ind. Mus.*, Sâhibganj, Rangoon].

*punctatissima*, Chaudoir, *Mon.*, p. 106.  
Hab. N. India, Simla.

*punctulata*, Chaudoir, *Mon.*, p. 99.  
Hab. India, Dekhan.

*sublaevis*, Chaudoir, *Mon.*, p. 86.

Hab. Malacca, Bangkok, Cambodia.

**OZAENINI**:—Lacordaire, Gen. Col., i, p. 155: *Révision*, Chaudoir, Ann. Soc. Ent. Belg., xi, 1867-68, p. 45: Horn, Gen. Carab., p. 128: Leconte & Horn, Class. Col., p. 23.

### Genus **PSEUDOZAENA**.

Lap. de Casteln., Et. Ent., i, 1834, p. 55: Mun. Cat., p. 153.

*Hoplognathus*, Chaudoir, Bull. Mosc., xxi, 1848, p. 101.

*Ozaena*, Klug, Dejean, ? pt. Lap. de Casteln., nec Olivier.

*Picrus*, Chaudoir, Bull. Mosc., xxvii (i), 1854, p. 290; *Révision*, p. 45.

*obscura* (*Picrus*), Chaudoir, Ann. Soc. Ent. Belg., xi, 1867-8, p. 46.

Hab. Borneo.

*opaca* (*Picrus*), Chaudoir, *l. c.*, p. 46.

Hab. India.

*orientalis* (*Ozaena*). Klug, Jahrb. Ins., 1834, p. 81, t. 1, f. 8: Chaudoir, Bull.

Mosc., xxi (i), 1848, p. 101; *id.*, xxvii (2), 1854, p. 291; *id.*, Ann. Soc. Ent.

Belg., xi, p. 45.

*megacephala*, (*Pseudozaena*), Lap. de Casteln., Et. Ent., i, 1834, p. 54, t. 2, f. 4.

Hab. Java, Borneo, Malacca.

### Genus **ITAMUS**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 65: Lacord., Gen. Col., i, p. 160:

Mun. Cat., p. 159: Chaudoir, Ann. Soc. Ent. Belg., xi, 1867, p. 51.

*castaneus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 67: Chaudoir, *l. c. supra* p. 51.

Hab. Burma.

### Genus **EUSTRA**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 65: Lacord., Gen. Col., i, p. 161:

Mun. Cat., p. 161: Chaudoir, Bull. Mosc., xxvii (i), 1854 p. 309: *id.*,

Ann. Soc. Ent. Belg., xi, 1867, p. 71.

*plagiata*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 66, t. 3, f. 1: Chaudoir, Bull.

Mosc., xxvii (2), 1854, p. 309; *id.*, Ann. Soc. Ent. Belg., xi, p. 71: Bates,

Trans. Ent. S. Lond., 1873, p. 237.

Hab. Burma, Martaban, Japan.

**NOMIINI**:—Horn, Gen. Carab., 1881, p. 129: Leconte & Horn, Class. Col., p. 24.

*Cosciniini*, Chaudoir, Bull. Mosc., i (i), 1876, p. 115.

### Genus **COSCINIA**.

Dejean, Spec., v, 1831, p. 478: Lacord., Gen. Col., i, p. 167: Mun. Cat., p. 162:

Chaudoir, Bull. Mosc., i (i), 1876, p. 115.

*Cymbionotum*, Baudi, Berlin. Ent. Zeits., 1864, p. 211.

*Graniger*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 197.

*Trychina*, Klug, Symb. Phys., 1832.

*fascigera*, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 92; *ib.*, 1 (i), 1876, p. 121.

Hab. N. India.

*Helferli*, Chaudoir, Bull. Mosc., xxxii (2), 1850, p. 441; *ib.*, 1 (i), 1876, p. 122.

Hab. Burma, Martaban, Siam.

**MORIONINI**:—Lacordaire, Gen. Col., i, p. 180: Chaudoir, Bull. Mosc., lv (i), 1880, p. 317: Horn, Gen. Carab., p. 132: Leconte & Horn, Class. Col., p. 26: Bates, Biol. Centr. Amer., Col., i (i), p. 88.

### Genus **MORIO**.

Latreille, Consid. Gén., 1810, tab. méth.: Lacord., Gen. Col., i, p. 183: Mun. Cat., p. 172: Putzeys, Stettin. Ent. Zeit., xl. 1879, p. 283: Chaudoir, *Monograph*, Bull. Mosc., lv (i), 1880, p. 327.

*Harpalus*, pt, Latreille: *Scarites*, pt, Fal. Beauv.

*angustus*, Chaudoir, Bull. Mosc., lv (i), 1880, p. 346.

Hab. Philippines.

*brevior*, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 217; vii, p. 727: Chaud., *l. c. supra*, p. 340.

Hab. Borneo, Sarawak.

*cordicollis*, Chaudoir, Bull. Mosc., lv (i), 1880, p. 343.

Hab. Borneo, Kandy, Balangoda (*Bates*).

*cucujoides*, Walker, Ann. Mag. N. H., (3s) ii, 1858, p. 203: ? Chaud., *l. c. supra*, p. 342: Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 211.

Hab. Ceylon.

*Dorlae*, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 217; vii, p. 727: Chaud., Bull. Mosc., lv (i), p. 345.

Hab. Borneo, Sarawak.

*intermedius*, Chaudoir, Bull. Mosc., lv (i), 1880, p. 344.

Hab. Philippines, Batchian, Ternate, ? Java.

*luzonicus*, Chaudoir, *l. c.*, xxv (i), 1852, p. 81; *id.*, lv (i), 1880, p. 344: Putzeys, Ann. Mus. Civ. Gen., vii, p. 726.

Hab. Siam, Philippines, Amboina, Ternate.

*orientalis*, Dejean, Spec., i, 1825, p. 432: Putzeys, Ann. Mus. Civ. Gen., iv, p. 216: Bates, *l. c.*, (2s.) vii, 1839, p. 106: Chaud., Bull. Mosc., lv (i), 1880, p. 338.

Hab. Java, Burma, Bhamo, Meetan, [*Ind. Mus.*, Tavoy, Tenasserim].

*subconvexus*, Chaudoir, Bull. Mosc., lv (i), 1880, p. 340.

Hab. ? Java.

*submarginatus*, Chaudoir, *l. c.*, p. 342.

Hab. ? Borneo, Sunda Islands.

*trogositoides*, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203, *neo* Chaudoir, Bull. Mosc., xxv (i), 1852, p. 81: Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 143, 211,

Hab. Ceylon, ? Andaman Islands.

*Walkerii*, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 216 : Chaud., Bull. Mosc., iv (i), 1880, p. 341.

Hab. Ceylon, Kandy (*Bates*).

### Genus **MORIOIDIUS.**

Chaudoir, Bull. Mosc., iv (i), 1880, p. 380.

*Doriae*, Chaudoir, *l. c.*, p. 383.

Hab. Borneo, Sarawak.

**BEMBIDIONINI**:—Lacordaire, Gen. Col., i, 1854, p. 379 : Hora, Gen. Carab., p. 133 :

Leconte & Horn, Class. Col., p. 27.

### Genus **TACHYPUS.**

Lacordaire, Gen. Col., i, 1854, p. 381 : Mun. Cat., p. 400.

*indicus*, Chaudoir, Bull. Mosc., xxiii (3), 1850, p. 189.

Hab. N. India.

*semilucidus*, Motschulsky, Et. Ent. 1861, p. 24 ; Bull. Mosc., xxxvii (3), 1864, p.

180 : Bates, Trans. Ent. S. Lond., 1873, p. 300.

*nubifer*, Morawitz, Bull. Acad. St. Petersb., v, 1862, p. 327.

Hab. Hongkong, Japan, Amuria.

### Genus **BEMBIDION.**

Latreille, Hist. Nat. Ins., viii, 1804, p. 221 : Lacord., Gen. Col., i, p. 382 : Jacq.

Duval, *Monograph* (Eur. Spec.), Ann. Soc. Ent. Fr., (2 s.) ix, 1851, p. 441 ; x,

1852, p. 101 : Schaum, Berlin. Ent. Zeits., iv, 1860, p. 198 : Mun. Cat., p. 405.

*Actedion*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 182.

*Amerizus*, Chaudoir, Rev. Mag. Zool., 1863, p. 216.

*Apteromimus*, Wollaston, Col. St. Helena, 1877, p. 7.

*Bembicidium*, Mun. Cat. p. 405.

*Campa*, Motschulsky, Ins. Sib., 1842, p. 263 ; Bull. Mosc., *l. c. supra*, p. 185.

*Chlorodion*, Motschulsky, Bull. Mosc., *l. c. supra* p. 182.

*Cillenus*, Samouelle, Ent. Comp., 1819, p. 148 : Curtis, Brit. Ent., i, 1828, p. 200.

*Emphanes*, Motschulsky, Käfer Russl., 1850 : Bull. Mosc., *l. c. supra*, p. 185.

*Endosomatium*, Wollaston, Col. St. Helena, 1877, p. 8.

*Eudromus*, Kirby, Faun. Bor. Amer. 1837, p. 55.

*Eurytrachelus*, Motschulsky, Käfer Russl., 1850 ; Bull. Mosc., *l. c. supra*, p. 183.

*Hydrium*, Leconte, Ann. Lyc. Nat. Hist. N. York, iv, 1848, p. 353 : Motsch., Bull. Mosc., *l. c. supra*, p. 183.

*Leja*, Dejean, Spec., v, 1831, p. 150.

*Lopha*, Dejean, *l. c.*, p. 183 : Motsch., Bull. Mosc., *l. c. supra*, p. 190.

*Lymnaeum*, Stephens, Ill. Brit. Ent., ii, 1829, p. 3 : Motsch., Bull. Mosc., *l. c. supra*, p. 133.

*Metallina*, Motschulsky, Käfer Russl., 1850 ; Bull. Mosc., *l. c. supra*, p. 187.

*Neja*, Motschulsky, Bull. Mosc., *l. c.*, p. 188.



- Nepha*, Motschulsky, *l. c.*, p. 190.  
*Notaphus* (Megerle), Stephens, Ill. Brit. Ent. ii, 1829, p. 4; Motsch., Bull. Mosc., *l. c.*, p. 184.  
*Ochthedromus*, Leconte, *l. c. supra* p. 153.  
*Oeys*, Stephens, *l. c. supra*, p. 10; Motsch., Bull. Mosc., *l. c. supra*, p. 188.  
*Ocydromus*, Clairville, Ent. Helv., ii, 1806, p. 20.  
*Odontium*, Leconte, *l. c. supra*, p. 352.  
*Omala*, Motschulsky, Ins. Sib., 1842, p. 250.  
*Peryphus*, Dejean, Spec. v. 1831, p. 101; Motsch., Bull. Mosc. *l. c. supra*, p. 189.  
*Phila*, Motschulsky, Ins. Sib., 1842, p. 260; Bull. Mosc., xxxvii (3), 1864, p. 188.  
*Philochthus*, Stephens, *l. c. supra*, p. 7; Motsch., Bull. Mosc., *l. c.* p. 186.  
*Plataphus*, Motschulsky, Bull. Mosc., *l. c. supra*, p. 184.  
*Princidium*, Motschulsky, *l. c. supra*, p. 181.  
*Pseudophilochthus*, Wollaston, Col. St. Helena, 1877, p. 7.  
*Sinechostictus* Motschulsky, Bull. Mosc., *l. c. supra*, p. 186.  
*Talanes*, Motschulsky, *l. c. supra*, p. 187.  
*Testedium*, Motschulsky, *l. c. supra*, p. 182.  
*Trepans*, Motschulsky, *l. c. supra*, p. 186.
- callipygum**, Bohemann, Freg. Eug. Resa, Col. 1858, p. 17.  
 Hab. Hongkong.
- hloream**, Bates, Trans. Ent. S. Lond., 1873, p. 332.  
 Hab. Yangtse Valley, Japan.
- collutum** Bates, *l. c.*, p. 332.  
 Hab. Yangtse Valley, Fuchau.
- europs**, Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 156.  
 Hab. Ceylon, Kandy.
- luridipenne**, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 199.  
 Hab. Bengal.
- niloticum**, Dejean, Spec., v, 1831, p. 73; Bates, Trans. Ent. S. Lond., 1873, p. 301; *ib.*, 1883, p. 269.  
*Batesii* (Notaphus), Putzeys, C. R. Soc. Ent. Belg., xviii, 1875, p. lii.  
*opulentum*, Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 420.  
 Hab. Egypt, Japan, China, Ceylon.
- \*pamirense**, Bates, Proc. Zool. S. Lond., 1878, p. 718.  
 Hab. Pamir, between Sirikol and Pangu [*Ind. Mus.*, type].
- \*punctipenne**, Bates, *l. c.*, p. 718.  
 Hab. ? Pámir or near Yarkand [*Ind. Mus.*, type].
- tæniatum**, Wiedemann, Zool. Mag., ii (1), 1823, p. 62.  
 Hab. Bengal.
- xanthacrum**, Chaudoir, Bull. Mosc., xxiii (3), 1850, p. 175, note.  
 Hab. N. India.

Genus **TACHYNOTUS.**

Motschulsky, Bull. Mosc., xxxiv, (i), 1861, p. 100 : Mun. Cat., p. 395.

*castaneus*, Motschulsky, *l.c. supra*, p. 100, t. 9, f. 1.

Hab. Ceylon.

Genus **TACHYS.**

(Ziegler) Motschulsky, Käfer Russl., 1850 : Mun. Cat., p. 401 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 737 ; Bates, Biol. Centr. Amer., Col., i (i), p. 138.

[Although Motschulsky's revision of the genus (summarised in Et. Ent., 1862, p. 27) has not been generally accepted, his observations deserve apparently more attention than has hitherto been given to them. I reproduce here the arrangement proposed by him in his own words :—

*I.—Antennes allongées, composées d'articles plus longs que larges.*

(a) corps plus ou moins convexe, ovalaire, luisant :—

1. élytres rétrécies vers la base, glabres au milieu, avec un petit sillon basal et un entier vers la suture et la marge latérale :—*Tachylopha*.

2. élytres profondément sillonnées vers la suture :—*Tachyura*—*Klugii*, *orientalis*, Nietner.

(b) corps plus ou moins déprimé, oblong ou parallèle, avec un reflet métallique, changeant sur les élytres, qui sont striées, surtout vers la suture. *Tachys*.

(c) corps déprimé, allongé, parallèle ; élytres multistriées ; tête petite, courte ; troisième article de palpes max. élargi. *Lymnastis*—*pullulus*, *indicus*, Motsch.

*II.—Antennes pas ou à peine plus longues que la moitié du corps, robustes, grossissant vers l'extrémité et composées d'articles plus ou moins larges.*

(a) corps déprimé presque parallèle ; cotés du corselet rebordés sur toute leur largeur, sans angles relevés en arrière ; élytres multistriées ; elles vivent sous l'écorce des arbres. *Tachymenis*—*umbrosa*, Motsch.

(b) corps un peu convexe, ovalaire ; cotés du corselet rebordés seulement en arrière, avec les angles à peine saillants ; élytres glabres, sans striés, ou à peine marquées de chaque côté de la suture des sillons plus ou moins effacés ; palpes grands, de la longueur de la tête ; graduellement atténués en avant. *Polyderis*—*tenellus*, Motsch.

To these I have added

*Elaphropus*, Motsch., Bull. Mosc., xii, 1839, p. 4 ; *id.*, *ib.*, xxii, 1859, p. 40, f. 4 : Mun. Cat., p. 400—*gracilis*, *latissimus*, Motsch.]

*acaroides*, Motsch., Et. Ent., 1859, p. 39 : Putzeys, Ann. Mus. Civ. Gen., vii, p. 240.  
Hab. Ceylon, Colombo.

*albicornis*, Schaum, Berlin Ent. Zeits., iv, 1860, p. 199.  
Hab. Hongkong.

*amplians*, Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 155.  
Hab. Ceylon, Kandy.

*anceps*, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 742.  
Hab. India.

- arcuatus*, Putzeys, *l. c.*, p. 744.  
Hab. Ceylon.
- atomarius*, Wollaston, Col. Hesperid., 1868, p. 28 : Bates, Ann. Mag. N. H., (5 s.) xvii, p. 152.  
*microscopica*, Bates, Trans. Ent. S. Lond., 1873, p. 299.  
? *tenella* (*Polyderis*), Motsch., Et. Ent., 1862, p. 35.  
Hab. Cape Verd Islands, Ceylon (Bogawantalawa).
- bioculatus*, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 743 : Bates, *l. c.*, (2 s.) vii 1889, p. 105.  
Hab. Ceylon ; Burma, Bhamo, Teintso, Tenasserim.
- ceylanicus* (*Bembidium*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 423.  
Hab. Ceylon.
- cinctipennis*, Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 99.  
Hab. Ceylon, Colombo.
- coracinus*, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 739.  
Hab. Borneo, Sarawak.
- dorsalis*, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 508.  
Hab. India.
- emarginatus* (*Bembidium*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 425 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 739 : Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 155.  
*scydmaenoides*, Bates, Trans. Ent. S. Lond., 1873, p. 299 (*nec* Nietner).  
Hab. Ceylon, Colombo (*Bates*), Fuchau, Lower Yangtse Valley.
- eulides*, Bates, Ann. Mag. N. H., (6 s.) xvii, 1886, p. 153.  
Hab. Ceylon, Dikoya.
- finitimus* (*Bembidium*), Walker, Ann. Mag. N. H., (3 s.) ii, 1858, p. 204.  
Hab. Ceylon.
- flaviculus*, Motschulsky, Et. Ent., 1859, p. 39.  
Hab. Ceylon.
- fumigatus*, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 509.  
Hab. India.
- fuscus*, Schaum, Berlin Ent. Zeits., iv, 1860, p. 200 : Putzeys, Ann. Mus. Civ. Gen., vii, p. 741.  
Hab. Hongkong.
- gracilis* (*Elaphropus*), Motsch., Et. Ent., 1862, p. 36.  
Hab. India.
- gradatus*, Bates, Trans. Ent. S. Lond., 1873, p. 331.  
Hab. Fuchau, China.
- impresipennis*, Motschulsky, Et. Ent., 1859, p. 39 : Putzeys, Ann. Mus. Civ. Gen., vii, p. 745.  
Hab. Ceylon, Colombo.
- impressus*, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 508.  
Hab. India.

- indicus* (*Lymnaeum*), Motsch., Bull. Mosc., xxiv (4), 1851, p. 507; *id.* (*Lymnastis*), Et. Ent., 1862, p. 27.  
Hab. India.
- infans*, Bates, Ann. Mag. N. H., (6s.) xvii, 1886, p. 154.  
Hab. Ceylon, Kandy.
- Klugii* (*Bembidium*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 423.  
Hab. Ceylon.
- latissimus* (*Elaphropus*), Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 508: *id.*, Et. Ent., 1859, t. 1, f. 5.  
Hab. India.
- Nietnerii* (*Tachyta*), Schaum, Berlin. Ent. Zeits., vii, 1863, p. 88.  
Hab. Ceylon.
- notaphoides*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 156.  
Hab. Ceylon, Kitugalle.
- orientalis* (*Bembidium*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 425.  
Hab. Ceylon.
- ornatus* (*Bembidium*), Nietner, *l. c.*, p. 426: Putzeys, Ann. Mus. Civ. Gen., vii, p. 741.  
Hab. Ceylon, Kandy (*Bates*).
- ovatus* (*Lopha*), Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 509.  
*albicornis*, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 199.  
Hab. Hongkong.
- parallellus* Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 507.  
Hab. India.
- perypinus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 153.  
Hab. Ceylon, Kitugalle.
- poecilopterus*, Bates, Trans. Ent. S. Lond., 1873, p. 331.  
Hab. Fuchau, China.
- politus*, Motsch., Bull. Mosc., xxiv (4), 1851, p. 509: Putzeys, Ann. Mus. Civ. Gen., vii p. 743.  
*ebeninus* (*Bembidium*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 424.  
Hab. Ceylon.
- pullulus* (*Lymnastis*), Motschulsky, Et. Ent., 1862, p. 31.  
Hab. India.
- scydmaenoides* (*Bembidium*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 427.  
Hab. Ceylon, Colombo (*Bates*); Yangtse Valley (*Lewis*).
- sericeus*, Motschulsky, Bull. Mosc., xxiv (4), 1851, p. 507.  
Hab. India.
- spilotus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 152.  
Hab. Ceylon, Colombo.
- subvittatus*, Bates, *l. c.*, p. 151.  
Hab. Ceylon, Dikoya.

- sulcatus* (*Tachys*), Motsch., Bull. Mosc., xxiv (4), 1851, p. 509 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 740.  
Hab. India.
- sulculatus*, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 743.  
Hab. Hongkong.
- suturalis* (*Tachys*), Motsch., Bull. Mosc., xxiv (4), 1851, p. 508 : Putzeys, *l. c.*, *supra*. p. 746.  
Hab. India.
- tenellus*, Motsch., Et. Ent., 1862, p. 35.  
Hab. India.
- triangularis* (*Bembidium*), Nietner, Journ. As. Soc. Beng., 1857, p. 72 : Ann. Mag. N. H., (3s.) ii, 1858, p. 422 : Schaum, Berlin. Ent. Zeits., 1863, p. 72 : Bates, Trans. Ent. S. Lond., 1873, p. 298.  
*atriceps*, W. MacLeay, Trans. Ent. S. N. S. Wales, 1871, p. 116.  
Hab. Egypt, Yemen (Arabia), Japan, Yangtse Valley, Ceylon, Colombo, Dikoya (*Bates*), Celebes, Melbourne, Queensland.
- tropicus* (*Bembidium*), Nietner, Ann. Mag. N. H., (2s.) ii, 1858, p. 421.  
Hab. Ceylon, Dikoya (*Bates*).
- truncatus* (*Bembidium*), Nietner, *l. c.*, p. 421.  
Hab. Ceylon.
- umbrosus*, Motsch., Bull. Mosc., xxiv (4), 1851, p. 507 ; *id.*, *ib.*, xxv, 1862, p. 32. (*Tachymenis*), Et. Ent., ix, 1862, p. 32.  
? *extremus* (*Acupalpus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204.  
Hab. India, Ceylon, Dikoya (*Bates*), Kiukiang in Yangtse Valley.
- vixstriatus*, Bates, Trans. Ent. S. Lond., 1873, p. 331.  
Hab. Yangtse Valley.
- POGONINI** :—Lacordaire, Gen. Col., i, 1854, p. 364 : Chaudoir, *Essai*, Ann. Soc. Ent. Belg., xiv, 1871, p. 21 : Horn Gen. Carab., p. 135.

### Genus **POGONUS.**

- Dejean, Spec., iii, 1828, p. 6 : Lacord., Gen. Col., i, p. 368 : Mun. Cat., p. 384 : Chaudoir, *Essai Mon.*, Ann. Soc. Ent. Belg., xiv, 1871, p. 23.
- hindustanus*, Motsch., Bull. Mosc. xxxvii (3), 1864, p. 192 : Chaudoir, *Ess.*, p. 38 (*gen. dub*).  
Hab. India, Tranquebar.
- transfuga*, Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 30.  
*orientalis*, Gebler, Bull. Mosc., xx (i), 1847, p. 319.  
*persicus*, Chaudoir, *l. c.*, xv, 1842, p. 821.  
Hab. Siberia, S. Russia, Persia, ? Kashmir.

### Genus **PATROBUS.**

- Dejean, Spec., iii, 1828, p. 26 : Lacord., Gen. Col., i, p. 367 : Mun. Cat., p. 386 : Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 40 : Schaum, Naturg. Deutsch. Ins. i, p. 375.  
*Carabus*, Paykull, Duftschmid, Panzer, Illiger. *Harpalus*, Gyllenhal, Zetterstedt. *Platysma*, Sturm.



- flavipes*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 191 : Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 40 : Bates, Trans. Ent. S. Lond., 1873, p. 294 : (*Deltomerus*) Chaudoir, Bull. Mosc., liii (3), 1878, p. 79.  
Hab. Japan, Yangtse Valley, Hongkong.
- yunnanus*, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 317.  
Hab. Yunnan.

Genus **TRECHUS.**

- Clairville, Ent. Helv., ii, 1806, p. 22 : Lacord., Gen. Col., i, p. 370 : Mun. Cat., p. 389 : *Mon.*, Putzeys, Stettin Ent. Zeit., 1847, p. 302 : Pandellé, Mat. Col. France, 1867, p. 131.  
*Blenus*, pt. Stephens, Ill. Brit. Ent., 1828, p. 50 : Motsch., Bull. Mosc. xxxvii (3), 1864, p. 190.  
*Epaphius*, Stephens, *l. c.*, *supra* p. 50.  
*Thalassophilus*, Wollaston Ins. Mader., 1854, p. 20.
- convexus*, MacLeay, Annul. Javan, 1825, p. 20.  
Hab. Java.
- fasciatus*, Motsch., Bull. Mosc., xxiv (4), 1851, p. 506.  
Hab. India.
- PTEROSTICHINI**:—Horn, Gen. Carab., p. 136 : Leconte & Horn, Class. Col., p. 30.  
*Feronides*, Lacordaire, Gen. Col., i, p. 317.  
*Stomides*, Lacordaire, *l. c.*, p. 247.  
*Trigonotomides*, Lacordaire, *l. c.*, p. 309.
- Div. TRIGONOTOMINA**:—Lacordaire, *l. c.* : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xi, 1868, p. 151.

Genus **TRIPLOGENIUS.**

- Chaudoir, Bull. Mosc., xxv (1), 1852, p. 71 : *id.*, *Monograph*, Ann. Soc. Ent. Belg., xi, 1868, p. 152.  
*Omasus*, Morawitz, Motschulsky, MacLeay.  
*Trigonotoma*, pt. Dejean, Laporte.
- ? *aeratus* (*Omasus*), Hope, Gray's Zool. Misc., 1831, p. 21.  
Hab. Nepal.
- andamanensis*, Chaudoir, Bull. Mosc., liii (3), 1878, p. 22.  
Hab. Andaman Islands.
- Buqueti, Lap. de Casteln., Et. Ent., 1834, p. 77 : Chaudoir, *Mon*, p. 162 : Bull. Mosc., liii (3), 1878, p. 31.  
Hab. Java.
- chalcothorax*, Chaudoir, Ann. Soc. Ent. Belg. xi, 1868, p. 153 : Bates, Ann. Mus. Civ. Gen., (2s) vii, 1889, p. 105.  
Hab. Cambodia, Cochin China ; Burmah, Bhamo.
- himalayicus* (*Omasus*), Redtenb., Hügel's Kaschm., iv (2), 1844, p. 501.  
Hab. N. W. Himalaya ; Mussóoree.
- ? *indicus* (*Omasus*), Hope, Gray's Zool. Misc., 1831, p. 21.  
Hab. Nepal.

- ingens* (*Omasus*), Morawitz, Beitr. Z. Käf. Faun. Jesso, i, 1863, p. 54 : Chaudoir, Ann. Soc. Ent. Belg., xi, p. 154.  
*(magnus* (*Omasus*), Motschulsky, Et. Ent., 1860, p. 5.  
 Hab. China, Japan.
- insignis*, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 310.  
 Hab. Borneo, Sarawak, Labuan.
- Mouhotii*, Chaudoir, *Mon.*, p. 152 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 105.  
 Hab. Cambodia ; Burma, Bhamo.
- obscurus*, Lap. de Casteln., Et. Ent., 1834, p. 76.  
 Hab. Java.
- planicollis*, Dejean, Spec., iii, 1828, p. 185 : Chaud., *Mon.*, p. 154.  
 Hab. Bengal.
- praestans*, Chaudoir, *Mon.*, p. 154.  
 Hab. Hongkong.
- Putzeysii*, Chaudoir, Bull. Mosc., liii (3), 1878, p. 31.  
 Hab. Java.
- rectangulus*, Chaudoir, *Mon.*, p. 153.  
 Hab. Dekhan.
- semiviolaceus*, Chaudoir, *Mon.*, p. 152.  
 Hab. N. India.
- serraticollis*, Chaudoir, *Mon.*, p. 153.  
 Hab. Dekhan.
- viridicollis* (*Omasus*), MacLeay, Annul. Javan., 1825, p. 17 : Chaudoir, *Mon.*, p. 154 : Guérin, Ic. Règne Anim., t. 6, f. 2a : Gray, Griffith Anim. Kingd., Ins., i., 1832., t. 25, f. 2.  
*bicolor*, Lap. de Casteln., Et. Ent., 1834, p. 75, t. 2, f. 2 : Chaud., *Mon.*, p. 152 ; *id.*, Bull. Mosc., liii (3), 1878, p. 33.  
 Hab. Java.
- Waterhousei*, Chaudoir, Rev. Mag. Zool., 1862, p. 489 ; *id.*, *Mon.*, p. 55.  
 Hab. N. India, Java.

### Genus **LESTICUS.**

- Dejean, Spec., iii, 1828, p. 190 : Lacord., Gen. Col., i, p. 312 : Mun. Cat., p. 294 ; Chaudoir, Ann. Soc. Ent. Belg., xi, 1868, p. 155.
- amabilis*, Chaudoir, *l. c. supra*, p. 155.  
 Hab. Java.
- janthinus*, Dejean, Spec., iii, 1828, p. 190 : Ic. Col. Eur., ii, t. 124, f. 3 : Lap. de Casteln., Hist. Nat. Ins., i, p. 120 : Chaudoir, *l. c.*, p. 155.  
 Hab. Java.
- tricostatus*, Chaudoir, *l. c. supra*, p. 157.  
 Hab. India.

Genus **TRIGONOGNATHA.**

Motschulsky, Et. Ent., vi, 1857, p. 25.

*princeps*, Bates, Trans. Ent. S. Lond., 1883, p. 243.

Hab. China, Kwantung.

Genus **TRIGONOTOMA.**

Dejean, Spec., iii, 1828, p. 182 : Lacord., Gen. Col., i, p. 311 : Mun. Cat., p. 293 :

Chaudoir, Bull. Mosc., xxv (i), 1852, p. 71 ; *id.*, *Monograph*, Ann. Soc.

Ent. Belg., xi, 1868, p. 158.

*chalceola*, Bates, Trans. Ent. S. Lond., 1873, p. 328.

Hab. Hongkong.

*Comottoi*, R. Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 308.

Hab. Burma.

*concinna*, Lap. de Casteln., Et. Ent., 1834, p. 77 : Chaudoir, *Mon.*, p. 159 : Bates,

Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 105.

Hab. Java.

*crenata*, Chaudoir, *Mon.*, p. 159.

Hab. India.

*curtula*, Chaudoir, *Mon.*, p. 160.

Hab. Laos.

*Dohrnii*, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 69 ; *Mon.*, p. 159.

Hab. Hongkong.

*fulgidicollis*, Lap. de Casteln., Et. Ent., 1834, p. 77 : Gestro, Ann. Mus. Civ. Gen.,

xviii, 1882, p. 309.

Hab. Java, ? Laos.

*indica*, Brullé, Hist. Nat. Ins., iv, 1840, p. 333 : Chaud., *Mon.*, p. 158 : Bates, Ann.

Mag. N. H., (5 s.) xvii, 1886, p. 145.

*viridicollis*, Dejean, Spec., iii, 1828, p. 183 (*neo* MacLeay) : Lap. de

Casteln., Hist. Nat. Ins., i, p. 220.

Hab. Java, Ceylon, Colombo.

*Lewisii*, Bates, Trans. Ent. S. Lond., 1873, p. 284.

var. *bhamoensis*, Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 105.

Hab. Manchuria, Japan, China, Burma, Bhamo.

*luzonica*, Chaudoir, *Mon.*, p. 161.

Hab. Philippines, Luzon, Manila.

*nitidicollis*, Chaudoir, *Mon.*, p. 160.

Hab. Cochinchina.

*Petelli*, Lap. de Casteln., Et. Ent., 1834, p. 78 : Chaud., *Mon.*, p. 159.

Hab. Java.

*similis*, Chaudoir, *Mon.*, p. 158.

Hab. Dekhan.

Genus **TRIGONOMINA.**

Motschulsky, Bull. Mosc. xxxvii (4), 1864, p. 349 : Mun. Cat., p. 293.

? = *Triplogenys*, Chaudoir, *g. v.*

*politicollis*, Motschulsky, *l. c.*, p. 349.

Hab. India.

Div. **STOMINA**:—Lacordaire, Gen. Col., i, p. 247 : Chaudoir, Bull. Mosc., xix (4), 1846, p. 511.

Genus **IDIOMORPHUS.**

Chaudoir, Bull. Mosc., xix (4), 1846, p. 515 : Lacord., Gen. Col., i, p. 254 : Mun.

Cat., p. 248 : Horn, Gen. Carab., p. 175.

*Guerinii*, Chaudoir, Bull. Mosc., xix (4), 1846, p. 518 : Lacord., Gen. Col., Atlas, t. 12, f. 1 a.

Hab. India, Nilgiris.

Genus **DISPHAERICUS.**

Waterhouse, Trans. Ent. S. Lond., iii, 1842, p. 211 : Lacord., Gen. Col., i, p. 249 :

Mun. Cat., p. 247 : Horn, Gen. Carab., p. 126.

*Dyschiridium*, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 130.

*Spanus*, Westwood, Proceed. Ent. S. Lond., iii, Feb. 1864, p. 3.

*marginicollis*, Schaum, Berlin. Ent. Zeits., 1864, p. 122, t. 2, f. 3.

Hab. India, Tranquebar.

*ovicollis*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 73.

Hab. Ceylon, Dikoya.

Genus **PACHYTRACHELUS.**

Chaudoir, Bull. Mosc., xxv (i), 1852, p. 85 : Mun. Cat., p. 248.

*Batoscelis*, Lacord., Gen. Col., i, 1854, p. 261 : Mun. Cat., p. 249.

*Systenognathus*, Putzeys, Mém. Liège, xviii, 1862, p. 18 : Mun. Cat., p. 189.

*ceylonicus* (*Batoscelis*), Motschulsky, Bull. Mosc., xxxiv (i), 1861, p. 103.

Hab. Ceylon.

*cribriceps*, Chaudoir, *l. c.*, xxv (i), 1852, p. 86.

Hab. N. India.

*discipennis* (*Agonoderus*), Dejean, Spec., v, 1831, p. 815.

Hab. India, Simla.

*oblongus* (*Agonoderus*), Dejean, *l. c.*, p. 813.

Hab. India.

*politus*, Schmidt Goebel, Faun. Col. Birm., 1846, t. 2, f. 8 a.-d.

Hab. Burma.

*porosus*, Putzeys, Mém. Liège, xviii, 1862, p. 19, t. 1, f. 2-4.

Hab. India.

Div. **PTEROSTICHINI**:—Horn, Gen. Carab., p. 137.

## Genus CATADROMUS.

MacLeay, Annul. Javan., 1825, p. 18 : Lacord., Gen. Col., i, p. 321 : Mun. Cat., p. 258.

*tenebrioides* (*Carabus*), Olivier, Enc. Méth., v, 1790, p. 324 ; *id.*, Ent., iii, 35, p. 17, t. 6, f. 67 : Dejean, Spec., iii, p. 187 : Gray, Griffith, Anim. Kingd., Ins. i, t. 12, f. 3 : Macleay, Annul. Javan., p. 19, t. 1, f. 5,  
*Rajah* (*Harpalus*), Wiedemann, Anal. Ent., 1824, p. 7.  
 Hab. Java [*Ind. Mus.*, Australia ?].

## Genus PTEROSTICHUS.

Bonelli, Obs. Ent. 1809, *tab. syn.* : Lacord., Gen. Col., i, p. 400 : Mun. Cat., p. 317.

*Adelosia*, Stephens, Cat. Brit. Ins. (2 ed.), 1832.

*Aello*, Gozis, M. T. Schw. Ent. Ges., vi, 1882, p. 297.

*Agonodemus*, Chaudoir, Bull. Mosc., xi, 1838, p. 9.

*Arachnoidius*, Chaudoir, *l. c.*, p. 9.

*Argutor* (Megerle), Stephens, Ill. Brit. Ent., i, 1828.

*Argutoroidius*, Chaudoir, Ann. Soc. Ent. Belg., xix, 1876, p. 114.

*Bothriopterus*, Chaudoir, Bull. Mosc., xi, 1838, p. 9.

*Brachystylus*, pt. Chaudoir, *l. c.*, p. 10.

*Bryobius*, Chaudoir, *l. c.*, p. 10.

*Calopterus*, Chaudoir, *l. c.*, p. 11.

*Ceneus*, Chaudoir, *l. c.*, xxviii (3), 1865, p. 109.

*Cheporus*, Latreille, Règne. Anim., (2 ed.) iv, 1825, p. 396.

*Cophosus* (Ziegler), Stephens, Ill. Brit. Ent., i, 1828 : Chaud., *l. c.*, *supra*, p. 1.

*Cosciniopterus*, Chaudoir, *l. c.* *supra*, p. 11.

*Cryobius*, Chaudoir, *l. c.*, p. 11.

*Dysidius*, Chaudoir, *l. c.*, p. 8.

*Glyptopterus*, Chaudoir, *l. c.*, p. 10.

*Gonoderus*, Motschulsky, Bull. Mosc., xxxii, 1859, p. 149.

*Haplocoelus*, Chaudoir, Bull. Mosc., xi, 1838, p. 8.

*Haptoderus*, Chaudoir, *l. c.*, p. 10.

*Hyperperes* (Esch.), Chaudoir, *l. c.*, p. 8.

*Lianoe*, Gozis, M. T. Schw. Ent. Ges., vi, 1882, p. 298.

*Lyperopherus*, Motschulsky, Mém. Ac. St. Petersb., v, 1846, p. 136.

*Lyperosomus*, Motschulsky.

*Lyperus*, Chaudoir, Bull. Mosc., xi, 1838, p. 12.

*Lyropedius*, Seidlitz, Fauna Baltica, (2 ed.), 1887, p. 36.

*Lyrothorax*, Chaudoir, *l. c.*, *supra*, p. 9.

*Melanius*, Bonelli Mém. Acad. Turin, *tab. syn.*, 1809.

*Myosodus*, Fischer, Ent. Imp. Russ., ii, 1823, p. 122.

*Omasus* (Ziegler), Stephens, Ill. Brit. Ent., i, 1828.

*Oreophilus*, Chaudoir, *l. c.* *supra*, p. 9.

*Orthomus*, Chaudoir, *l. c.*, p. 8.

*Parapedius*, Seidlitz, Fauna Baltica, (2 ed.), 1887, p. 36.

*Pedius*, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 242.

*Petrophilus*, Chaudoir, *l. c.* *supra*, p. 9.

*Phonias*, Gozis, Recherche, 1886, p. 8.



*Platypterus*, Chaudoir, *l. c. supra*, p. 11.

*Platysma*, Bonelli, Obs. Ent., 1869, *tal. syn.* : Mun. Cat., p. 317.

*Pledarus*, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 254.

*Pseudocoryobius*, Motschulsky, Käfer Russl., 1850, 9.

*Pseudoderus*, Seidlitz, Fauna Baltica, (2 ed.), 1887, p. 36.

*Pseudopedius*, Seidlitz, *l. c.*, p. 36.

*Pseudosteropus*, Chaudoir, *l. c. supra*, p. 9.

*Psychobius*, Chaudoir, *l. c.*, p. 12.

*Rhagadus*, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 261.

*Steropus* (Megerle), Stephens, Ill. Brit. Ent., i, 1828. Chaudoir, *l. c. supra*, p. 9.

[The above synonymy requires examination and revision.]

*aeneocupreus* (*Platysma*), Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 95.

Hab. Yunnan.

*birmanus* (*Lozandrus*), Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 106.

Hab. Burma, Bhamo.

*curtatus* (*Euryperus*), Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 312.

Hab. Yunnan.

*diversus* (*Omasus*), Fairmaire, *l. c.*, p. 311.

Hab. Yunnan.

*gagates* (*Platysma*), Hope, Gray's Zool. Misc., 1831, p. 21.

Hab. Nepál.

*latecosta* (*Platysma*), Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 94.

Hab. Yunnan.

*Yunnanus*, (*Pterostichus*), Fairmaire, *l. c.*, p. 94.

Hab. Yunnan.

*longinquus*, Bates, Trans. Ent. S. Lond., 1873, p. 286.

Hab. Yangtse Valley, Japan.

*Noguchii*, Bates, *l. c.*, p. 286.

Hab. Yangtse Valley, Nagasaki.

*simillimus*, Fairmaire, Ann. Soc. Ent. Fr., (4s.) vi, 1886, p. 312.

Hab. Yunnan. ÷

*piscescens* (*Simodontus*), Chaudoir, Bull. Mosc., xli (3), 1873, p. 114.

Hab. ? Philippines? Australia.

### Genus RHATHYMUS.

Dejean, Spec., v, 1831, p. 783 : Mun. Cat., p. 334 : Chaudoir, Bull. Mosc., liii (3), 1878, p. 7.

*Rathymus*, Dejean, *l. c. supra* : Lacord., Gen. Col., i, p. 329.

*Selenidia*, Motsch., Et. Ent., 1855, p. 45.

*Strigia*, Brullé, Hist. Nat. Ins., iv, 1840, p. 382 : Lacord., Gen. Col., i, p. 327 : Mun. Cat., p. 333.

*ater*, Chaudoir, Bull. Mosc., liii (2), 1878, p. 8.

Hab. India, Coromandel.

*maxillaris* (*Strigia*), Brullé, Hist. Nat. Ins., iv, 1840, p. 382, t. 15, f. 6 : Chaudoir, *l.c. supra*, p. 8.

Hab. India.

*stigma*, Fabr., Syst. Eleuth., i, 1801, p. 192 : (*Selenidia*) Motsch., Et. Ent., 1855, p. 45 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 140 ; *id.*, Bull. Mosc., liii (3), p. 9.

? *sulcatus*, Fabr. Ent. Syst. iv, App. 1794, p. 443.

Hab. India, Dekhan, Java.

### Genus **LAGARUS**.

Chaudoir, Bull. Mosc., xi, 1838, p. 10.

? ? *Argutor*, Stephens, Ill. Brit. Ent., 1828 ; *teste*, Gozis, Recherche, p. 8.

? *impunctatus*, Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 145.

Hab. Ceylon, Colombo.

### Genus **ABACETUS**.

Dejean, Spec., iii, 1828, p. 195 : Lacord., Gen. Col., i, p. 315 : Mun. Cat., p. 295 : Chaudoir, Stettin. Ent. Zeit., 1859, p. 126 ; *id.*, *Monograph*, Bull. Mosc., xlii (i), 1869, p. 353.

*Astygis*, Rambur, Faun. Andal., 1842, p. 95.

*Coelostomus*, MacLeay, Annul. Javan., 1825, p. 23 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123.

*Dicaelindus*, MacLeay, Annul. Javan., 1825, p. 18 : Schaum, Berlin. Ent. Zeits., vii, 1863, p. 86 : Chaud., Bull. Mosc., xlii (i), 1869, p. 356.

*Distrigodæ*, pt., Motsch., Bull. Mosc., xxxvii (4), 1864, p. 353 : Mun. Cat., p. 296.

*Distrigus*, Dejean, Spec., iii, 1828, p. 191 : Lacord., Gen. Col., i, p. 316 : Mun. Cat., p. 296.

*aenigma*, Chaudoir, *Mon.*, Bull. Mosc., xlii (i), 1869, p. 353 : Fairm. Ann. Soc. Ent. Fr., 1888, p. 336.

Hab. Cochin China, Tonkin, Hongkong.

*amplicollis*, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1869, p. 106.

Hab. Burma, Katha, Teintso, Bhamo.

*anomalus*, Chaudoir, *Mon.*, p. 367.

Hab. Ceylon, Colombo.

*antiquus* (*Argutor*), Dejean, Spec., iii, 1828, p. 246 : Chaudoir, *Mon.*, p. 391.

*picipes*, Motsch., Bull. Mosc., xxxviii (4), 1865, p. 228 (*nec* MacLeay).

*relinquens* (*Argutor*), Walker, Ann. Mag. N.H., (3s.) ii, 1858, p. 204.

*submetallicus* (*Distrigus*), Nietner, *l.c.*, p. 177.

Hab. India, Coromandel, Ceylon, Colombo.

*atratus* (*Distrigus*), Dejean, Spec., iii, 1828, p. 194 : Chaud., *Mon.*, p. 353.

*costatus* (*Distrigus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 176.

Hab. Ceylon, Colombo.

*bipunctatus* (*Distrigodæ*), Motsch., Bull. Mosc., xxxviii (4), 1864, p. 352 ; Chaudoir, *Mon.*, p. 386.

? *pallipes*, Chaudoir, *q. v.*

- rufulus* (*Distrigodes*), Motsch., *l.c.*, xxxviii (4), 1865, p. 327.  
Hab. India, Burma.
- bisignatus*, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 105.  
Hab. Burma, Bhamo, Shwegu.
- carinifrons*, Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 144.  
Hab. Ceylon, Colombo.
- chalceolus*, Chaudoir, *Mon.*, p. 384.  
Hab. N. India.
- cordicollis*, Chaudoir, *Mon.*, p. 357.  
Hab. India. Tranquebar; Ceylon, Galle.
- cyathoderus*, Chaudoir, *Mon.*, p. 373.  
Hab. N. India.
- degener* (*Argutor*), Walker, Ann. Mag. N.H., (3s.) ii, 1858, p. 204.  
Hab. Ceylon.
- Dejeanii* (*Distrigus*), Nietner, *l.c.*, p. 178 : Chaud., *Mon.*, p. 390.  
*flavipes* (*Coelostomus*), Motsch., Bull. Mosc., xxxviii (4), 1865, p. 228.  
Hab. India, Ceylon.
- dilutipes*, Chaudoir, *Mon.*, p. 383.  
Hab. Siam.
- dorsalis* (*Astygis*), Motsch., Bull. Mosc., xxxviii (4), 1865, p. 229 : Chaud., *Mon.*, p. 397.  
? = *rufopiceus*, Nietner, *q. v.*  
Hab. India, Tranquebar, Madura.
- felspathicus* (*Dicalindus*), MacLeay, Annul. Javan., 1825, p. 19, t. 1, f. 6 : Schaum, Berlin. Ent. Zeits., 1863, p. 86.  
Hab. Java.
- femorallis* (*Distrigodes*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 354 : Chaud., *Mon.*, p. 386.  
Hab. India, Tranquebar.
- guttula*, Chaudoir, *Mon.*, p. 374.  
Hab. Dekhan.
- haplosternus*, Chaudoir, Bull. Mosc., liii (3), 1878, p. 25.  
Hab. Siam, Bangkok.
- hirmococius*, Chaudoir, *Mon.*, p. 372.  
Hab. Burma, Rangoon.
- impressicollis* (*Distrigus*), Dejean, Spec., iii, 1828, p. 193 : Lap. de Casteln., Hist. Nat. Ins., 1, p. 118 : Chaud., *Mon.*, p. 359.  
Hab. India, Dekhan.
- leucotelus*, Bates, Trans. Ent. S. Lond., 1873, p. 283.  
Hab. Yangtse Valley, Nagasaki.
- lioderes*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 144.  
Hab. Ceylon, Colombo.

- maculipes*, Chaudoir, *Mon.*, p. 384.  
Hab. Burma, Martaban.
- marginicollis*, Chaudoir, *Mon.*, p. 359.  
Hab. Burma, Pegu, Rangoon.
- Nietneri*, Chaudoir, *Mon.*, p. 392.  
*aeneus* (*Distrigus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 177 : (*nec*,  
Dejean).  
Hab. Ceylon, Colombo.
- pallipes*, Chaudoir, *Mon.*, p. 386.  
? = *bipunctatus*, Motschulsky, *q.v.*  
Hab. Burma, Martaban.
- picipes* (*Coelostomus*), MacLeay, Annul. Javan, 1825, p. 24 : Hope, Col. Man., ii,  
t. 3 f. *a.d.* (*nec* Motsch.) : Lap. de Casteln., Hist. Nat. Ins., i, p. 123.  
Hab. India.
- picticornis*, Chaudoir, Bull. Mosc., liii (3), 1878, p. 27.  
Hab. Middle China.
- politus*, Chaudoir, *Mon.*, p. 368.  
Hab. India, Dekhan.
- politulus*, Chaudoir, *Mon.*, p. 369.  
Hab. Burma, Rangoon.
- promptus* (*Distrigus*), Dejean, Spec., iii, 1828, p. 195 : Chaud., *Mon.*, p. 370.  
Hab. India, Coromandel.
- quadricollis*, Chaudoir, *Mon.*, p. 332.  
Hab. Burma, Martaban.
- quadriguttatus*, Chaudoir, *Mon.*, 387 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 143.  
Hab. Ceylon, Kandy.
- quadrinotatus*, Chaudoir, *Mon.*, p. 380.  
Hab. N. India.
- quadrinotatus*, Chaudoir, *Mon.*, p. 388.  
Hab. Bengal.
- reflexus*, Chaudoir, *Mon.*, p. 358.  
Hab. N. India.
- rufopiceus* (*Distrigus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 177 : Chaud.,  
*Mon.*, p. 398.  
Hab. Ceylon.
- rufotestaceus*, Chaudoir, *Mon.*, p. 398.  
Hab. Dekhan.
- siamensis*, Chaudoir, Bull. Mosc., liii (3), 1878, p. 26.  
Hab. Siam, Bangkok.

### Genus CHLAEMINUS.

- Motsch., Bull. Mosc., xxxvii (4), 1864, p. 351 : Mun. Cat. p. 229 : Chaud., *Monograph*,  
Bull. Mosc., xlii (1), 1869, p. 401.  
*Distrigodes*, pt, Motschulsky, *l.c. supra*, p. 353.



- biguttatus**, Motsch., Bull. Mosc. xxxvii (4), 1864, p. 351 : Chaud., *Mon.*, p. 401.  
Hab. India, Dekhan, Tranquebar, Burma, Martaban.
- biplagiatus**, Chaudoir, *Mon.*, p. 402.  
Hab. Burma, Rangoon.
- cruciatus**, Chaudoir, *Mon.*, p. 403.  
Hab. Bengal.
- flavoguttatus** (*Distrigodes*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 354 : Chaud., *Mon.*, p. 404.  
Hab. Burma.
- quadriplagiatus**, Chaudoir, *Mon.*, p. 403.  
Hab. Dekhan.

Genus **HOLCONOTUS.**

- Chaudoir, Rev. Mag. Zool., (3s.) iv, 1876, p. 352.
- ferrugineus** (*Abacetus*), Chaudoir, Bull. Mosc., xli (2), 1869, p. 399: Schmidt Goebel, Faun. Col. Birm., t. 2, f. 6.  
Hab. Burma, Siam.

Genus **AULACOCOELIUS.**

- Chaudoir, Bull. Mosc., xlii (2), 1869, p. 405.
- Hopleurus** Chaudoir, *l.c.*, p. 406.  
Hab. ? N. Australia, ? Philippines, Luzon.

Genus **POECILUS.**

- Bonelli, Obs. Ent., 1809, tab. syn : Lacord., Gen. Col., i, p. 402; Mun. Cat., p. 300 : Chaudoir, L'Abeille, xiv, 1875, p. 1-54.
- Ancholeus*, subg., Chaudoir, L'Abeille, xiv, 1876, p. 45.
- Blennidus*, Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 251.
- Brachystylus*, pt, Chaudoir, Bull. Mosc., xi, 1838, p. 10.
- Carenostylus*, Chaudoir, *l.c.*, p. 8.
- Chlaenioidius*, Chaudoir, Bull. Mosc., xxxviii (3), 1865, p. 110.
- Cyclomus*, Chaudoir, Bull. Mosc., xi, 1838, p. 8.
- Derus*, Motschulsky, Käfer Russl., 1850, p. 50; *id.*, Bull. Mosc., xxxvii, (4), 1865, p. 252.
- Sogines*, (Leach) Stephens, Ill. Brit. Ent., 1828 : Chaud., Bull. Mosc., xi, p. 8.
- Trirammatus*, Chaudoir, Bull. Mosc., xi, 1838, p. 8 : Motsch., *l.c.*, xxxviii (4), 1865, p. 252.
- cupreus**, Linn., Faun. Suec., 1746, No. 801 : Dejean, Spec., iii, p. 207 : for *syn. vide* Mun. Cat., p. 301.  
Hab. Europe, N. Africa, Asia Minor, Persia, Japan, Canton (*Putzeys*).
- indicus** (*Sogines*), Motschulsky, Bull. Mosc., xxxviii (4), 1865, p. 257.  
Hab. N. India.



Genus **TROPIDOCERUS.**

Chaudoir, Bull. Mosc., liii (3), 1878, p. 9.

*indicus*, Chaudoir, *l.c.*, p. 13.

Hab. N. India.

Genus **MOLOPS.**

Bonelli, Obs. Ent. i, 1809, *tab. syn.*; Mun. Cat., p. 332 : Kraatz, Deutsche Ent. Zeits., 1875, p. 369.

*piliferus*, Bates, Proc. Zool. S. Lond., 1878, p. 718.

Hab. India, Murree [*Ind. Mus.*, type].

Genus **ÆPSERA.**

Chaudoir, Bull. Mosc., xlviii (i), 1874, p. 28.

*ferruginea*, Chaudoir, *l.c.*, p. 30.

Hab. Burma.

Genus **AMARA.**

Bonelli, Obs. Ent., 1809, *tab. syn.* : Lacord., Gen. Col., i, p. 332 : Mun. Cat., p. 347 : Putzeys, *Monograph*, L'Abeille, 1871, p. 100.

*Acrodon*, Zimmermann, Gistl's Faunus, i, 1832, p. 40 : Mun. Cat., p. 344.

*Amarocelia*, Motschulsky, Et. Ent., 1862, p. 4.

*Amathitis*, Zimmermann, *l.c. supra*, p. 39 : Mun. Cat., p. 342.

*Bradytus*, Stephens, Ill. Brit. Ent., i, 1828, p. 131 : Mun. Cat., p. 338.

*Celia*, Zimmermann, *l.c. supra*, p. 18 : Mun. Cat., p. 344.

*Cyrtionotus* (*Cyrtionotus*), Stephens, *l.c. supra*, p. 138 : Mun. Cat., p. 339 :

Bates, Biol. Centr. Amer., Col., i (i), p. 76.

*Isopleurus*, pt, Kirby, Faun. Boreal. Amer., iv, 1837, p. 34.

*Leocnemis* (*Liocnemis*), Zimmermann, *l.c. supra*, p. 38 : Mun. Cat., p. 342.

*Leirus*, Zimmermann, *l.c. supra*, p. 17 (= *Cyrtionotus*).

*Percosia*, Zimmermann, *l.c. supra*, p. 18 : Mun. Cat., p. 337.

*Triæna*, Leconte, Ann. Lyc. N. York, iv, 1848, p. 265.

*ambigena*, Bates, Proc. Zool. S. Lond., 1878, p. 716.

Hab. N. W. Himálaya, Pangong Valley [*Ind. Mus.*, type].

\**badiola* (*Amathitis*), Bates, *l.c.*, p. 717.

Hab. north of Kuenlun [*Ind. Mus.*, type].

\**bamidunya*, Bates, *l.c.*, p. 716.

Hab. Pámir [*Ind. Mus.*, type].

*compactus* (*Bradytus*), Bates, Proc. Zool. S. Lond., 1878, p. 49.

Hab. India, Murree [*Ind. Mus.*, type].

*darjelingensis*, Putzeys, Stettin. Ent. Zeit., xxxviii, 1877, p. 102.

Hab. Darjiling.

\* *frivola* (*Liocnemis*), Bates, Proc. Zool. S. Lond., 1878, p. 717.

Hab. ? Yarkand, or E. slopes Pámir [*Ind. Mus.*, type].

*himalaica* (*Liocnemis*), Bates, *l.c. supra*, p. 716.

Hab. India, Ladák [*Ind. Mus.*, type].

*indica* (*Liocnemis*), Putzeys, Mém. Liège, 1866, p. 216.

Hab. N. India.

\* *kuenlunensis* (*Amathitis*), Bates, *l. o. supra*, p. 717.

Hab. Sanju [*Ind. Mus.*, type].

*nitens* (*Cyrtotus*), Putzeys, Et. s. l. Amara, 1866, p. 234.

Hab. Manchuria, Japan, N. China, Szechuen.

\* *pamirensis* (*Cyrtotus*), Bates, Proc. Zool. S. Lond., 1878, p. 717.

Hab. Pámir [*Ind. Mus.*, type].

\* *tartariae* (*Liocnemis*), Bates, *l. c. supra*, p. 716.

Hab. Between Yangihissar and Sirikol [*Ind. Mus.*, type].

? *yunnana*, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 95.

Hab. China.

### Genus **DRIMOSTOMA.**

Dejean, Spec., v, 1831, p. 745 : Lacord., Gen. Col., i, p. 313 : Mun. Cat., p. 294 :

Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 9.

*rectangulum*, Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 11 : Bates, Ann. Mus.

Civ. Gen., (2 s.) vii, 1889, p. 106.

Hab. Java, Burma, Shwegu, Teintso, Bhamo.

### Genus **STOMONAXUS.**

Motschulsky, Etudes Entomologiques, 1859, p. 34.

*Diceromerus*, Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 15.

*Chaudoiri* (*Diceromerus*), Fleutiaux, Ann. Soc. Ent. Fr., (6 s.) vii, 1887, p. 60.

Hab. Annam, Hué.

*orientalis* (*Stomonaxus*), Motsch., Et. Ent., 1859, p. 35 : Chaudoir (*Diceromerus*),

Ann. Soc. Ent. Belg., xv, 1872, p. 15.

Hab. India, Tranquebar, Ceylon, Dikoya (*Bates*).

*striaticollis*, Dejean, Spec., v, 1831 p. 747 : Chaud., Ann. Soc. Ent. Belg., xv, 1872, p. 13.

*ceylanicum* (*Drimostoma*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 178.

? *marginalis* (*Drimostoma*), Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 51 :

Bates, *ib.*, (5 s.) xvii, 1886, p. 212.

*rufipes* (*Drimostoma*), Bohem., Freg. Eug. Resa, Col., 1858, p. 3.

? *sculptipennis* (*Stomonaxus*), Motsch., Et. Ent., 1859, p. 35, t. 1, f. 6.

Hab. India, Ceylon, Hong-Kong, Japan, Senegal.

**LIGININI** :—Lacord., Gen. Col., i, p. 231 : Horn, Gen. Carab., p. 139 : Leconte & Horn., Class. Col., 1883, p. 32.

### Genus **RHEMBUS.**

Latreille, Ic. Col. Eur., i, 1822, p. 85 : Mun. Cat., p. 238 : Laferté, Ann. Soc. Ent. Fr., (2 s.) ix, 1851, p. 278.

? *Diplocheila*, Brullé, Hist. Nat. Ins., Col., i, 1834, p. 407 : Horn ; Bull.

Brookl. Ent. Soc. iii, 1880, p. 52.

*Rembus*, Latr., *l. c. supra* : Lacord., Gen. Col., i, p. 233 : Laferté.

*Symphysus*, Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 180,

- elongatus*. Bates, Trans. Ent. S. Lond., 1873, p. 256.  
Hab. Yangtse Valley, Japan.
- impressus* (*Carabus*), Fabr., Ent. Syst. Suppl., 1798, p. 57; Syst. Eleuth., i, p. 188 :  
Dejean, Spec., ii, p. 383.  
Hab. India.
- latifrons*, Dejean, Spec. v, 1831, p. 679.  
Hab. India.
- opacus*, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 67.  
Hab. Japan China, ? India, Java.
- politus* (*Carabus*), Fabr., Ent. Syst., i, 1792, p. 146; Syst. Eleuth., i, p. 189 : Dejean,  
Spec., ii, p. 381 : Lap. de Casteln., Hist. Nat. Ins., Col. i, p. 133.  
Hab. India, [*Ind. Mus.*, Bengal, Sahibganj].
- unicolor*, Nietner, Ann. Mag. N. H., (3 s.), ii p. 1858, p. 180.  
Hab. Ceylon.
- zeelandicus*, Redtenb., Reise Novara, Col., 1867, p. 10, t. 1, f. 5 : Bates, Trans.  
Ent. S. Lond., 1873, p. 256.  
Hab. Formosa, Yangtse Valley, Japan, ? New Zealand.

### Genus **BADISTER.**

- Clairville, Ent. Helv., ii, 1806, p. 90 : Brullé, Hist. Nat. Ins., Col., i, 1834, p. 403 :  
Lacord., Gen. Col., i, p. 234 : Mun. Cat., p. 239 : Laferté, Ann. Soc. Ent. Fr., (2 s.)  
ix, 1851, p. 285 : Leconte, Trans. Amer. Ent. S., viii, p. 165; *id.*, Bull. Brookl.  
Ent. S., v, 1832, p. 7.  
*Amblychus*, Gyllenhal, Ins. Suec., ii, 1810, p. 74.  
*Baudia*, Ragusa, Nat. Sicil., vii, 1884, p. 3.  
*Trimorphus*, Stephens, Cat. Brit. Ins., 1829, p. 405.
- rubidicollis*. Wiedemann, Zool. Mag., ii (i), 1823, p. 58.  
Hab. Bengal.
- thoracicus*. Wiedemann, l. c., p. 57.  
Hab. India.

### Genus **ECCOPTOGENIUS.**

- Chaudoir, Bull. Mosc., xxv (i), 1852, p. 72 : Lacord., Gen. Col., i, p. 320 : Mun.  
Cat., p. 297.
- moestus*, Chaudoir, l. c. *supra*, p. 74 : Bates, Ann. Mag. N. H., (5. s.) xvii, p. 212.  
? *retinens*, Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 51.  
Hab. N. India, Ceylon.

### Genus **DIROTUS.**

- MacLeay, Annul. Javan., 1825, p. 16 : Lacord., Gen. Col., i, p. 312 : Mun. Cat.,  
p. 294 : Lap. de Casteln., Hist. Nat. Ins., i, p. 133.
- subiridescens*, MacLeay, Annul. Javan., 1825, p. 16 : Hope, Col. Man., ii, t. 2, f.  
1, a—c.  
Hab. Java.

**PLATYNINI**:—Horn, Gen. Carab., p. 141 : Leconte & Horn, Class. Col., p. 33 : (*Anchomenini*) Bates, Biol. Centr. Amer., Col., ii., p. 91.

Horn forms three sub-divisions :—*Platyni* (*Calathus*, *Pristonychus*), *Masorei*, and *Perigoni*.

### Genus **SPHODRUS**.

Clairville, Ent. Helv., ii, 1806, p. 88 : Brullé, Hist. Nat. Ins. Col., i, 1834, p. 310 :

Lacord., Gen. Col., i, p. 340 : Mun. Cat., p. 356 : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 314 *tab. syn.*

? *brunneus*, Hope, Gray's Zool, Misc., 1831, p. 21.

Hab. Nepál.

*cordicollis*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 315.

Hab. Circassia, Georgia, India [Ind. Mus., ? var. Murree].

*indus*, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 67.

Hab. N. W. Himálaya [? Ind. Mus. Murree].

### Genus **EULEPTUS**.

Klug, Bericht über Madagasc. Ins., 1833, p. 9 : Lacordaire, Gen. Col., i, 1854, p. 353.

*ooderus*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 365.

Hab. Himálaya.

### Genus **FEANUS**.

Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 107.

*spinipennis*, Bates, *l. c.*, p. 108.

Hab. Burma, Bhamo, Teintso.

### Genus **ONYCHOLABIS**.

Bates, Trans. Ent. S. Lond., 1873, p. 329.

*sinensis*, Bates, *l. c.*, p. 329.

Hab. Yangtse Valley.

### Genus **CALATHUS**.

Bonelli, Obs. Ent., tab. syn., 1809 : Dejean, Spec., iii, p. 62 : Brullé, Hist. Nat.

Ins. Col., i, 1834, p. 303 : Lacord., Gen. Col., i, p. 342 : Gautier, MT. Schw. Ent.

Ges., ii, 1867, p. 236 : Putzeys, *Monograph*, Ann. Soc. Ent. Belg., xvi, 1873, p. 19 :

Mun. Cat., p. 360 : Leconte, Proc. Acad. Phil., vii, 1854, p. 36 ; *ib.*, 1860, p. 317.

*Odontonyx*, Stephens, Cat. Brit. Ins., 1829, p. 28 ; *ib.*, Man. Brit. Col., p. 28.

*Pristodactyla*, Dejean, Spec., iii, 1828, p. 82 : Lacord., Gen. Col., i, p. 343.

*Pristosia*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 311 : Mun. Cat. p. 360.

*aeneocupreus*, Fairmaire, Ann. Sc. Ent. Fr., (6 s.) vi, 1886, p. 314.

Hab. Yunnan.

*cathaicus* (*Pristodactyla*), Bates, Trans. Ent. S. Lond., 1873, p. 330.

Hab. Fuchau.



*cyclodera* (*Pristodaetyla*), Bates, l. c., p. 273.

Hab. Fuchau, Japan.

*crenatus*, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 82.

Hab. N. India.

*Delevayii*, Fairmaire, l. c., xxxi, 1887, p. 96.

Hab. Yunnan.

*falsicolor*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 315.

Hab. Yunnan.

*Kollarii*, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 72.

*angustatus*, Redtenb., Hügel's Kaschmir, iv (2), 1844, p. 500 (*nom. praeoc.*).

Hab. India.

*lateritius*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 314.

Hab. Yunnan.

*pectiniger*, Putzeys, Ann. Soc. Ent. Belg., xvi, 1873, p. 86.

Hab. N. India.

*piceus* (*Pristosia*), Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 312 : Putzeys, Ann.

Soc. Ent. Belg., xvi, 1873, p. 91.

Hab. India.

### Genus **PRISTONYCHUS.**

Dejean, Spec., iii, 1828, p. 43 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 379 ; Lacord.,

Gen. Col., i, p. 341 : Mun. Cat., p. 358 : Schaufuss, *Monograph*, SB. Nat. Ges.

'Isis,' xlii, 1865, p. 139 : Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 379.

*Cryptotrichus*, Schaufuss, *Monograph*, 1865, p. 110 : Mun. Cat., p. 355.

*Cryptocnemus*, Motsch., Bull., Mosc., xxxvii, (3), 1864, p. 314.

*Ctenipes*, Latreille Règne Anim. (2 ed.) iv, 1829 p. 400.

{ *Læmostenus*, Bedel, Ann. Soc. Ent. Fr., (5s) vii, 1877, p. 250.

{ *Læmosthenes*, Bonelli, Mém. Ac. Turin, 1809, *tab. syn.* ; Mun. Cat., p. 355.

*Platynomerus*, Faldernann, Faun. Ent. Transc., i, 1835, p. 45 : Mun. Cat., p. 354.

*piscescens*, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 95.

Hab. Yunnan.

*spinifer*, Schaufuss, S. B. Nat. Ges. 'Isis,' 1862, p. 66 ; *ib.*, Mon., 1865, p. 176.

Hab. Himálaya.

### Genus **PLATYNUS.**

Bonelli, Obs. Ent., i, 1809, *tab. syn.* : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 316 :

Mun. Cat., p. 366 : Leconte, Proc. Acad. Phil., vii, 1854, p. 39 : Bates, Trans. Ent. S.

Lond., 1873, p. 278 ; *id.*, Biol. Centr. Amer. Col., i (i), p. 91 : Leconte, Bull. Brookl.

Ent. S., ii, 1879, p. 43.

*Agonocyrtus*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 317.

*Agonothorax*, Motsch., l. c., p. 317.

*Agonum*, Bonelli, Mém. Ac. Turin., 1813 *tab. syn.*

*Anchodemus*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 317.

*Anchomenus*, pt., Bonelli, Mém. Ac. Turin., 1813, *tab. syn.* : Lacord. Gen. Col., i, p. 349.



- Anchus*, Leconte, Proc. Ac. N. Sci. Phil., vii, 1854, p. 38.  
*Batenus*, Motsch., Bull. Mosc. l. c. *supra*, p. 317 *ined.* ?  
*Clibanarius*, Gozis, M. T. Schw. Ent. Ges., vi, 1882, p. 295.  
*Dolichodes*, Motsch., l. c. *supra*, p. 317.  
*Europhilus* (Chaudoir) : Motsch. l. c. p. 317 : *ined.* ?  
*Limodromus* (Eschsch.), Motsch., l. c. p. 317, 318.  
*Oxytelaphus*, Chaudoir, Bull. Mosc., xvi, 1843 p. 415.  
*Promecoptera*, Dejean, Spec., v., 1831, p. 443 ; Lacord., Gen. Col., i, p. 131 : Mun. Cat., p. 143.  
*Rhadine*, Leconte, Ann. Lyc. Nat. Hist. New York, 1848, p. 218.  
*Rhytidurus*, Chaudoir, Bull. Mosc., xvii (3), 1844, p. 470.  
*Tanytola*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 317.  
 [ *Anchomenus* (Bonelli), Bates (Biol. Centr. Amer., Col., i (i), p. 93, should apparently be separated].
- aeneotinctus* (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 330.  
 Hab. Fuchau.
- amaroides* (*Calathus*), Putzeys, Stettin. Ent. Zeit., xxxviii, 1877, p. 103.  
 Hab. Darjiling.
- ceylonicus* (*Agonothorax*), Motschulsky, Et., Ent., viii, 1859, p. 36.  
 Hab. Ceylon, Dikoya (*Bates*).
- chinensis*, Bohemann, Freg. Eug. Resa, Col., 1858, p. 15.  
 Hab. China.
- Dalmio* (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 279.  
 Hab. China, Fuchau, Japan.
- illocatus* Walker, Ann. Mag. N. H., (3s.) ii, 1853, p. 203 : Bates (*Anchomenus*), *ib.*, (5s.) xvii, 1836, p. 146.  
*degener* (*Argutor*), Walker, l. c. *supra*, p. 204.  
 Hab. Ceylon, Nuwara Eliya.
- iridens* (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 329.  
 Hab. Hongkong.
- \* *ladakensis*, Bates, Proc. Zool. S. Lond., 1873, p. 718.  
 Hab. Pámir, Pankong Valley, Tangtze, [*Ind. Mus.*, type].
- laetus*, Erichson, Nov. Acta Leop. Car., 1834, Suppl., p. 222, t. 37, f. 2.  
 Hab. Philippines.
- limbaticollis*, Gemm. & Har., Mun. Cat., p. 373.  
*limbatus*, Bohem., Freg. Eug. Resa, Col., 1853, p. 15 (*new Say*).  
 Hab. China.
- lisseopterus*, Chaudoir, Bull. Mosc., xxvii (i), 1854, p. 136.  
 Hab. N. India.
- magnus* (*Anchomenus*), Bates, Trans. Ent. S. Lond., 1873, p. 273.  
 Hab. Yangtse Valley, Shanghai, Japan.
- marginalis* (*Lebia*), Wiedemann, Zool. Mag., ii (i), 1823, p. 60. (? *Anchomenus*) : (*Promecoptera*) Lap. de Casteln., Hist. Nat. Ins., i, p. 54 :  
 Hab. Bengal.

- nuceus** (*Anchomenus*), Fairmaire, Ann. Soc. Ent. Belg. xxxi, 1887, p. 96.  
Hab. Yunnan.
- orbicollis** (*Agonocorythes*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 323.  
Hab. Hongkong.
- placidulus** (*Agonum*), Walker, Ann. Mag. N. H., (3s) ii, 1858, p. 203.  
Hab. Ceylon.
- politissimus**, Bates, Proc. Zool., S. Lond., 1878, p. 719.  
Hab. India, Murree (Panjab) [*Ind. Mus.*, type].
- protensus** (*Dyscolus*), Morawitz, Beitr. Käferf. Jesso, 1863, p. 42 : Bates, Trans. Ent. S. Lond., 1873, p. 278.  
Hab. China, Japan.
- scintillans**, Bohem., Freg. Eug. Resa, Col., 1858, p. 16.  
Hab. Hongkong.
- semicupreus** (*Agonum*), Fairmaire, Ann. Soc. Ent. Belg. 1887, p. 97.  
Hab. Yunnan.

### Genus **DICRANONCUS.**

- Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 392 ; Lacord., Gen. Col., i, p. 358 : Mun. Cat., p. 384 : Chaudoir, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 277.  
*Lowocrepis*, Brullé, Hist. Nat. Ins. Col., i, 1834, p. 325 (*nec* Eschsch.) : Motsch., Bull. Mosc., xxxvii (4), 1864, p. 309.
- amabilis**, Chaudoir, Ann. Soc. Ent. Fr., (3s.) ix, 1859, p. 350 note ; *id.*, (5s.) viii, 1878, p. 277.  
*ruficeps* (*Lowocrepis*), Brullé (*nec* MacLeay), Hist. Nat. Ins., Col., i, 1834, p. 325, t. 12, f. 2.  
Hab. N. India, Java.
- cinctipennis**, Chaudoir, Ann. Soc. Ent. Fr., (5s.) viii, 1878, p. 278.  
Hab. Ceylon, Hongkong.
- femoralis**, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 393 : *id.*, Ann. Fr., *loc. supra*, p. 277 : Bates, Trans. Ent. S. Lond., 1873, p. 278.  
*coelestinus* (*Lowocrepis*), Motsch., Bull. Mosc. xxxvii (3), 1864, p. 310.  
Hab. Bengal, Simla, Burma, Japan (*Lewis*).

### Genus **MENERA.**

- Motschulsky, Et. Ent., 1859, p. 32.
- quadridens**, Motschulsky, *loc.*, p. 32.  
Hab. Java.

### Genus **COLPODES.**

- MacLeay, Annul. Javan., 1825, p. 17 : Lacord. Gen. Col., i, p. 361 : Mun. Cat., p. 381 : Chaudoir, Ann. Soc. Ent. Fr., (3s.) ix, 1859, p. 287 ; *id.*, *Monograph*, *loc.*, (5s.) viii, 1878, p. 278 : Bates, Biol. Centr. Amer., Col., i (i), p. 100.  
*Abropus*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 306 (*nec* Guérin).  
*Dyscolus*, Dejean, Spec., v, 1831, p. 437 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 381 : Lacord., Gen. Col., i, p. 356.

- Lowocrepis*, Eschsch., Zool. Atlas, ii, 1829, p. 6 : Lacord., Gen. Col., i, p. 362.
- Metallosomus*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 304.
- Omiastus*, Motschulsky, *l.c.*, p. 306.
- Ophryodactylus*, Chaudoir, *l.c.*, xxiii (2), 1850, p. 382.
- Paranomus*, Chaudoir, *l.c.*, p. 383.
- Pleurosoma*, Guérin, Mag. Zool., vi, 1844, t. 136.
- Scaphiodactylus*, Chaudoir, Bull. Mosc., xi, 1838, p. 20.
- Stenocnemus*, Mannerheim, Bull. Mosc., x, 1837, p. 29.
- abropoides*, Chaudoir, *Mon.*, *l.c. supra* p. 361.  
Hab. Philippines.
- aeneipennis* (*Dyscolus*), Dejean, Spec., v, 1831, p. 441 ; Chaudoir, *Mon.*, p. 333.  
Hab. Java.
- aenescens*, Chaudoir, *Mon.*, p. 368.  
Hab. N. India.
- amoenus*, Chaudoir, Ann. Soc. Ent. Fr., (3s.) ix, 1859, p. 327 ; *Mon.*, p. 367.  
*splendens*, Morawitz, Bull. Acad. Petrop., v, 1863, p. 324.  
Hab. N.-W. India, Ceylon, Dikoya (Bates), Java, Philippines, Japan.
- apicatus*, Chaudoir, *Mon.*, p. 367.  
Hab. Philippines.
- Baconii*, Chaudoir, *Mon.*, p. 311.  
Hab. Bengal.
- bengalensis*, Chaudoir, *Mon.* p. 312.  
Hab. Bengal.
- bipars* (*Lobia*), Walker, Ann. Mag. N. H., (3s.) ii, 1853, p. 203 : Bates, *id.*, (5s.) xvii, 1886, p. 148.  
Hab. Ceylon.
- ? bispinus* (*Euplynes*), Motschulsky, Et. Ent., 1859, p. 33.  
Hab. Java.
- brunneus*, MacLeay, Annul. Javan., 1825, p. 17, t. 1, f. 3 : Gray, Griffith Anim. Kingd. Ins., i, t. 15, f. 3 : Lap. de Casteln., Hist. Nat. Ins., i, p. 57.  
Hab. Java.
- Buchanani*, Hope, Gray's Zool. Misc., 1831, p. 21 : Lap. de Casteln. *l.c.*, *supra*, p. 57.  
Hab. Nepal.
- coelopterus*, Chaudoir, *Mon.*, p. 368.  
Hab. Shanghai.
- cruralis*, Chaudoir, *Mon.*, p. 376.  
Hab. India, Malabar.
- Dohrnii*, Nietner, Ann. Mag. N. H. (3s.), ii, 1853, p. 429 ; Chaudoir, *Mon.*, p. 375.  
Hab. Ceylon, Colombo, Fusilawa.
- Hardwickii*, Hope, Gray's Zool. Misc., 1831, p. 21 : Lap. de Casteln., Hist. Nat. Ins. i, 1850, p. 57.  
Hab. Nepal.

- hirmocoelus*, Chaudoir, *Mon.*, 365.  
Hab. N. India.
- incertus*, Chaudoir, *Mon.*, p. 369.  
? = *Buchanani*, Hope, *supra cit.*  
Hab. India.
- iteratus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 149.  
Hab. Ceylon, Dikoya, Nuwara Eliya.
- japonicus*, (*Tanystola*), Motsch., Et. Ent., 1860, p. 9: ? Morawitz, Bull. Acad. St. Petersb., v, 1863, p. 324: Bates, Trans. Ent. S. Lond., 1873, p. 277.  
Hab. Japan, China.
- lampriodes*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 147.  
Hab. Ceylon, Hadley, Dikoya.
- luzonicus*, Chaudoir, *Mon.*, 366.  
Hab. Philippines.
- nigriceps* (*Lowocrepis*), Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 310.  
Hab. India.
- nilgherriensis*, Chaudoir, *Mon.*, p. 361.  
Hab. India, Nilgiris, Malabar.
- obscuritarsis*, Chaudoir, *Mon.*, p. 375.  
Hab. Burma, Rangoon.
- olivius*, Bates, Trans. Ent. S. Lond., 1873, p. 331.  
Hab. Hongkong.
- ovaliceps*, Bates, Proc. Zool. S. Lond., 1878, p. 719.  
Hab. India, Murree [*Ind. Mus.*, type].
- parallelus*, Chaudoir, Ann. Soc. Ent. Fr., (5s.) ix, 1859, p. 326; *Mon.*, p. 362.  
Hab. Sumatra.
- plagioderus*, Chaudoir, *Mon.*, p. 374.  
Hab. India.
- repletus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 148.  
Hab. Ceylon, Bogawantalawa.
- retusus*, Bates, *l.c. supra*, p. 148.  
Hab. Ceylon, Kandy.
- rotundatus*, Chaudoir, *Mon.*, p. 362.  
Hab. Nilgiris, Malabar.
- ruficeps* (*Lamprias*), MacLeay, Annul. Javan., 1825, p. 25: (*Lowocrepis*), Eschschsch., Zool. Atlas, ii, p. 6, t. 8, f. 3: Gray, Griffith's Anim. Kingd., Ins., i, 1832, t. 19, f. 1: Chaudoir, Ann. Soc. Ent. Fr., (3 s.) ix, 1859, p. 348; *id.*, *Mon.*, p. 376: Bates, Trans. Ent. S. Lond., 1883, p. 263; *id.*, Ann. Mag. N. H., (5 s.) xxii, p. 147.  
Hab. India, Java, Sumatra, Philippines [*Ind. Mus.*, Calcutta, Sikkim].
- sutitarsis* (*Dyscolus*), Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 385; Ann. Soc. Ent. Fr., (3 s.) ix, 1859, p. 351; *Mon.*, p. 375.  
Hab. Singapur, Sumatra.

- saphyrinus*, Chaudoir, *Mon.*, p. 366.  
Hab. Penang, Tonda.
- saphyripennis*, Chaudoir, *Mon.*, p. 334.  
Hab. India.
- semiaeneus*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 315.  
Hab. Yunnan.
- semistriatus*, Chaudoir *Mon.*, p. 365.  
Hab. N. India.
- smaragdipennis*, Chaudoir, Ann. Soc. Ent. Fr., (3 s.) ix, 1859, p. 359 : *Mon.*, p. 375.  
Hab. Sumatra, Mt. Singalang.
- stricticollis*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) vi, 1886, p. 316.  
Hab. Yunnan.
- subsericatus*, Fairmaire, l. c., p. 316.  
Hab. Yunnan.
- sycophanta*, Fairmaire, l. c., p. 316.  
Hab. Yunnan.
- Xenos*, Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 146.  
Hab. Ceylon, Bogawantalawa.

### Genus **PIRANTILLUS**.

- Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1819, p. 108.
- Fess, Bates, l. c., p. 109.  
Hab. Burma, Tenasserim, Meetan.

### Genus **CAPHORA**.

- Schmidt Goebel, Faun. Col. Birm., 1846, p. 91 : Lacord. Gen. Col., i, p. 309 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 76 : Mun. Cat., p. 146.
- humilis*, Schmidt Goebel, l. c. *supra*, p. 91, t. 3, f. 8 : Chaudoir, Bull. Mosc., li (3), 1876, p. 8.  
Hab. Burma.

### Genus **ANAUACUS**.

- MacLeay, Annul. Javan., 1825, p. 22 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123.
- Aephnidius*, MacLeay, Annul. Javan., 1825, p. 23 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123 : Lacord., Gen. Col., i, p. 308 : Chaudoir, *Mon.*, p. 15.
- Macracanthus*, Chaudoir, Bull. Mosc., xix, 1846, p. 539 ; *id.*, *Mon.*, p. 23 : Lacord., Gen. Col., i, p. 265.
- Masoreus*, 'Dejean, Spec., iii, 1828, p. 536 : Lacord., Gen. Col., i, p. 140 : Mun. Cat., p. 145 : Zimmermann, *Mon.*, Gistl's Faunus, i, 1832, p. 119 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 76 : Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 234 : Chaudoir, *Mon.*, l. c. li (3), 1876, p. 11, 23, 25 : Bates, Biol. Centr. Amer. Col., i (i), p. 174.



- adelioides* (*Aephnidius*), MacLeay, Annul. Javan., 1825, p. 23, t. 1, f. 7 : Schmidt Goebel, Faun. Col. Birm., p. 88 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123 : Bates, Trans. Ent. S. Lond., 1873, p. 307 : Chaudoir, *Mon.*, p. 17 : Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 110.  
*sericeus*, Zimmermann, *Mon.*, 1832, p. 120 : Motseh., Bull. Mosc., xxxvi (3), 1864, p. 234 : Chaud., *Mon.*, p. 17.  
 Hab. Java, Bengal, Dekhan, Burma, Bharno, Cochina China, Japan, W, Australia.
- fasciatus* (*Aephnidius*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 89 : Chaudoir, *Mon.*, p. 25.  
 var. *basalis*, Fleutiaux, Ann. Soc. Ent. Fr., (6 s.) vii, 1887, p. 59, 60, t. 4, f. 1.  
 Hab. Burma ; Annam, Hué.
- fuscipennis* (*Aephnidius*), Schmidt Goebel, *l. c.*, p. 89 : Chaudoir, *Mon.*, p. 16 : Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 110.  
 Hab. Burma, Bharno, Shwegu, Tenasserim.
- opaculus* (*Masoreus*), Zimmermann, *Mon. Carab.*, 1832, p. 120 : Chaudoir, *Mon.* p. 19.  
 Hab. India, Ceylon.
- orientalis* (*Masoreus*), Dejean, Spec., iii, 1828, p. 539 : Chaudoir, *Mon.* p. 14.  
*grandis*, Zimmermann, *Mon. Carab.*, 1832, p. 121.  
*laticollis*, Chaudoir, Bull. Mosc., xvi (4), 1843, p. 778.  
 Hab. India, Egypt, Abyssinia.
- pleuroneotes* (*Masoreus*), Zimmermann, *Mon.*, 1832, p. 120 : Chaudoir, *Mon.* p. 19.  
 Hab. India, Malabar, Coimbatore, Ceylon.
- quadrimaculatus* (*Aephnidius*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 90 : Chaudoir, *Mon.*, p. 25.  
 Hab. Burma.
- sericans* (*Masoreus*), Schmidt Goebel, *l. c. supra*, p. 87 : Chaudoir, *Mon.*, p. 28 (*gen. dub. near Mochtherus*).  
 Hab. Burma.
- sericeipennis* (*Anaulacus*), MacLeay, Annul. Javan., 1825, p. 22, t. 1, f. 4 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123 : Chaudoir, *Mon.*, p. 25.  
 Hab. Java.
- siamensis* (*Masoreus*), Chaudoir, *Mon.*, p. 25.  
 Hab. Bangkok.
- simplex* (*Aephnidius*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 89 : Chaudoir, *Mon.*, p. 22 : Bates, Ann. Mus. Civ. Gen., (2 s.) vii, 1889, p. 110.  
 Hab. Bengal, Malabar ; Burma, Bharno, Mandalay.

### Genus PERIGONA.

- Lap. de Casteln., Et. Ent., 1834, p. 15 : Chaudoir, Bull. Mosc., xlv (2), 1872, p. 281 : Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 218 : Bates, Biol. Centr. Amer., Col., i (1), p. 133.  
*Masoreus*, pt, Lacordaire, Gen. Col., i, p. 134.

- Nestra*, Motsch., Bull. Mosc., xxiv (4), 1851, p. 506 ; Et. Ent., 1859, p. 37 : Mun. Cat., p. 394.
- Siltopia*, Castelnau, Trans. R. S. Victoria, viii (2), 1868, p. 127.
- Spathinus*, Nietner, Ann. Mag. N. H. (3 s.), ii, 1858, p. 428 : Mun. Cat., p. 394.
- Trechicus*, Leconte, Trans. Amer. Phil. Soc. x, 1853, p. 386 : Lacord., Gen., Col., i, p. 393.
- Beccarii**, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 732.  
var. *suffusa*, Bates, Ann. Mag. N. H., (5 s.) xvii, 1886, p. 151.  
Hab. Borneo, Sarawak ; Ceylon.
- convexicollis**, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 729.  
Hab. Johore, Malayan Peninsula.
- fimicola**, Wollaston, Ins. Mader., 1854, p. 63 : Ann. Mag. N. H., (3 s.) viii, 1862, p. 288 ; Col. Hesperid., p. 27 : Bates Ann. Mag. N. H., (5 s.) xvii, 1886, p. 150.  
*Jansonianus*, Wollaston, Ann. Mag. N. H., (3 s.) ii, 1858, p. 19.  
Hab. Cape Verde Islands, Ceylon, Colombo.
- livens**, Putzeys, Ann. Mus. Civ. Gen., iv, 1873, p. 225.  
Hab. ? Coromandel.
- luzonica**, Putzeys, l. c., vii, 1875, p. 728.  
Hab. Philippines, Manilla.
- minor**, Putzeys, l. c., p. 734.  
Hab. Borneo, Sarawak.
- nigriceps** (*Spathinus*), Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 429.  
? = *fimicola*, Wollaston, *supra cit.*  
Hab. Ceylon.
- nigricollis** (*Nestra*), Motsch., Bull. Mosc., xxiv (4), 1851, p. 506 : Putzeys, Ann. Mus. Civ. Gen., iv, p. 222.  
Hab. Borneo, Sarawak, Ceylon.
- nigrifrons** (*Nestra*), Motsch., Et. Ent., 1859, p. 38, t. 1, f. 1 : Putzeys, l. c. *supra*, p. 220.  
Hab. Ceylon, Galle (*Putzeys*), Bogawantalawa (*Bates*).
- ruficollis** (*Nestra*), Motsch., Bull. Mosc., xxiv (4) 1851, p. 506 : Putzeys, Ann. Mus. Civ. Gen., iv, p. 222 ; Bates, l. c., (2 s.) vii, 1889, p. 104.  
Hab. Ceylon Kandy (*Bates*), Borneo, Sarawak (*Putzeys*), Burma (*Bates*).
- sinuaticollis**, Bates, Ann. Mag. N. H., (5s) xvii, 1886, p. 149.  
Hab. Ceylon.
- ANCHONODERINI** :—Lacordaire, Gen. Col., i, 1854, p. 373 : Bates, Ent. Mon. Mag., viii, 1871, p. 29 : Horn, Cat. Carab., p. 144 : Leconte & Horn, Class. Col., 1883, p. 35.

### Genus LASIOCERA.

- Dejean, Spec., v, 1831, p. 283 : Brullé, Hist. Nat. Ins. Col., i, p. 142 : Chaudoir, Bull. Mosc., xxxii (2), 1850, p. 402 : Lacord., Gen. Col., i, p. 376 : Mun. Cat., p. 397.

*orientalis*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 403.  
Hab. N. India.

### Genus **OCHTYPHILUS**.

Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 136; *id.*, Ann. Mag. N. H., (2 s.) xx, 1857, p. 275 : Mun. Cat. p. 399.  
*Perileptus*, Schaum, Nat. Ins., i, 1860, p. 663.  
*ceylanicus*, Nietner, Jl. As. Soc. Beng., *l. c. supra.*, p. 137 : Ann. Mag. *l. c. supra* p. 276 : Putzeys, Stettin Ent. Zeit., xxxi, p. 362.  
Hab. Ceylon.

### Genus **SELINA**.

Motsch., Et. Ent., 1857, p. 110 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 74.  
*Steleodera*, Schaum, Chaudoir, Bull. Mosc., xlv (i), 1872, p. 396.  
*Ritsemae*, Oberthür, Notes Leyden Mus., v, 1883, p. 223.  
Hab. E. Sumatra, Serdang.  
*Westermanni*, Motschulsky, Et. Ent., 1857, p. 110, t. 1, f. 6 : Schaum, Berlin Ent. Zeits., 1860, p. 172, t. 3, f. 11, a. b.  
*setosus* (*Pselaphanæ*), Walker, Ann. Mag. N. H., (3 s.) iii, 1859, p. 52 : Waterhouse, Aid Ident. Ins., t. 120.  
Hab. India, Tranquebar ; Ceylon, Peradeniya (*Bates*) ; ? Madagascar, Natal.

**HEXAGONINI** (*Otenodactylini*), Horn, Gen. Carab., p. 145.

### Genus **HEXAGONIA**.

Kirby, Trans. Linn. S. Lond., xiv, 1825, p. 563 : Brullé, Hist. Nat. Col., i, p. 476 : Lacord., Gen. Col., 1, p. 69 : Schmidt Goebel, Faun. Col. Birm., p. 49 : Mun. Cat., p. 86 : Bates, Biol. Centr. Amer., Col. i (i), p. 158.  
*Trigonodactyla*, Dejean, Spec. v, 1831, p. 288 : Chaud., Bull. Mosc., xxxiv (i), 1861, p. 532.  
*apicalis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 51, t. 2, f. 1.  
Hab. Calcutta (Kasipur).  
*Bowringii*, Schaum, Berlin Ent. Zeits., 1863, p. 73, 433, t. 3, f. 8.  
Hab. Penang.  
*brunnea*, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 531 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 433.  
Hab. N. India.  
*cephalotes* (*Odacantha*), Dejean, Spec. ii, 1826, p. 439 : (*Trigonodactylus*) Guérin, Mag. Zool., 1833, cl. ix, p. 73 : Lap. de Casteln., Hist. Nat. Ins., i, p. 31.  
Hab. India.  
*Kirbyi*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 51, t. 2, f. 2.  
Hab. Darjiling.

*longithorax* (*Lebia*), Wiedemann, Zool. Mag. ii (i), 1823, p. 58: Schaum, Berlin Ent. Zeits., vii, 1863, p. 433.

Hab. India.

*terminata*, Kirby, Trans. Linn. S. Lond., xiv, 1825, p. 564 (*nec* Dejean): Brullé, Hist. Nat. Ins., Col., i, p. 227: Lap. de Casteln., Hist. Nat. An. Art., i, p. 46.

Hab. India.

**ODACANTHINI** (*Odontacanthini* Col. Hefte. vi, p. 114): Lacordaire, Gen. Col., i, p. 71: Horn, Gen. Carab., p. 147: Leconte & Horn., Class. Col., 1883, p. 38.

### Genus **CASNONIA.**

Latreille, Ic. Col. Eur., i, 1822, p. 77: Lacord., Gen. Col., i, p. 72: Chaudoir Bull. Mosc., xxi (i), 1848, p. 44; *id.*, *ib.*, xxxv (4), 1862, p. 275; xlv (i), 1872, p. 397: Mun. Cat., p. 86: Leconte, Bull. Brookl. Ent. S., ii, 1880, p. 85: Bates, Biol. Centr. Amer., Col., i, (i), p. 160.

*Apiodera*, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 35: Lacord., Gen. Col., i, p. 72.

*Lachnothorax*, Motschulsky, Et. Ent., 1862, p. 48.

*Ophionea*, pt, Klug, Ent. Bras. Spec. prim., p. 298 (*nec* Eschsch.).

*Plagiorhytis*, Chaudoir, Bull. Mosc., xxi (i) 1848, p. 31: Lacord., Gen. Col., i, p. 71.

? *apicalis* (*Odacantha*), Chaudoir, Bull. Mosc., xlv (i), 1872, p. 408.

Hab. Siam, Bangkok.

*biguttata* (*Lachnothorax*), Motsch., Et. Ent., 1862, p. 50.

*oculata*, Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 291.

Hab. India, Tranquebar; Siam.

*bimaculata*, Kollar, Hügel Kaschmir, iv (2), 1844, p. 498, t. 23, f. 2: Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 25.

Hab. Kashmir, Simla [*Ind. Mus.*].

*celebensis*, R. Gestro, Ann. Mus. Civ. Gen., vii 1875, p. 854.

Hab. Siam, Bangkok.

*Chaudoirii* (*Ophionea*), Bohemann, Freg. Eug. Resa Col., 1858, p. 2.

Hab. Hongkong [*Ind. Mus.*].

*distigma*, Chaudoir, Bull. Mosc., xxii, (i), 1850, p. 26; xlv (i), 1872, p. 407.

*bimaculata*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 18 (*nec* Kollar).

Hab. Burma.

*flavicauda*, Bates, Trans. Ent. S. Lond., 1873, p. 303.

Hab. China, Fuchau, Japan.

*fulvipennis*, (*Odacantha*), Chaudoir, Bull. Mosc., xlv (i), 1872, p. 407: Bates, Trans. Ent. S. Lond., 1883, p. 278.

Hab. Hongkong, ? Celebes.

*fuscipennis* Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 26; *id.*, xxxv (4), 1862, p. 289: Fairm., Ann. Soc. Ent. Fr., (6 s.) viii, 1888, p. 334.

Hab. India, Simla, Tranquebar, Siam, Malacca, Tonkin, Maccassar, China, Chusan.

*haemorrhoidalis*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 219: Chaudoir *l. c.* xlv (i), 1872, p. 404; lii (2), 1877, p. 266.

Hab. India, Ceylon, Colombo (*Bates*), Siam, Celebes, ? Chusan.

*latifascia*, Chaudoir, Bull., Mosc., xlv (i), 1872, p. 404.

Hab. India.

*litura* (*Odacantha*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 22: Chaudoir, Bull. Mosc., xlv (i), 1872, p. 405; lii (2), 1877, p. 266.

Hab. Burma, Java, Japan.

*metallica*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) viii, 1888, p. 334.

Hab. Tonkin.

*opacipennis*, E. Gestro, Ann. Mus. Civ. Gen., (2 s.) vi, 1888, p. 107.

Hab. Burma, Bhamo.

*pilifera*, Nietner, Ann. Mag. N. H., (3 s.) ii, 1858, p. 179.

Hab. Ceylon.

*punctata*, Nietner, *l. c.*, *supra*, p. 178.

Hab. Ceylon.

*subapicalis*, Oberthür, Notes Leyden Mus., v, 1883, p. 216.

Hab. E Sumatra, Serdang.

*tetraspilota*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 19.

Hab. Burma.

*virgulifera*, Chaudoir, Bull. Mosc., xlv (i), 1872, p. 403: Gestro, Ann. Mus. Civ. Gen., vii, p. 854.

Hab. Siam, Bangkok.

### Genus **OPHIONEA**.

Eschsch., Zool. Atlas, ii, 1829, p. 5: Chaudoir, Bull. Mosc., xxi (i), 1848, p. 43;

Lacord., Gen. Col., i, p. 73: Mun. Cat., p. 85.

*Casnoidea*, Lap de Casteln., Et., Ent., i, 1834, p. 40; *id.*, Hist. Nat. An. Ins., i, p. 28.

*Beauchenti*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) viii, 1888, p. 333.

Hab. Tonkin.

*cyancephala* (*Carabus*), Fabr., Ent. Syst. Suppl., 1798 p. 60: (*Casnonia*) Dejean, Spec., i, p. 173; Lacord. Gen. Col. Atlas, t. 3. f. 2: Schmidt Goebel, Faun. Col. Birm., p. 20.

Hab. India, Ceylon, Colombo (*Bates*), Celebes, Japan, Hongkong [*Ind. Mus.*, Calcutta, S. India].

*interstitialis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 20.

Hab. Burma, Java, Soerabaya, Buitenzorg, Celebes.

*nigrofasciata*, Schmidt Goebel, *l. c.*, p. 21.

Hab. Burma, Ceylon, Colombo (*Bates*).

### Genus **DICRASPEDA**.

Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 300.

*brunnea*, Chaudoir, *l. c.*, p. 300.

Hab. Siam.



**DRYPTINI**:—Horn, Gen. Carab., p. 148 : Leconte & Horn, Class Col., 1883, p. 40 :  
Lacordaire (*Galeritides*), Gen. Col., i, p. 79.

### Genus **DRYPTA.**

Fabricius, Syst. Eleuth., i, 1801, p. 230 : Brullé, Hist. Nat. Ins. Col., i, p. 163 :  
Lacord. Gen. Col., i, p. 75 : Mun. Cat., p. 90.

*aeneipennis*, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.

Hab. Burma, Bhamo.

*amabilis*, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 35 (? = *Dendrocellus id*).

Hab. India, Tibet.

*crassiuscula*, Chaudoir, *l.c.*, xxxiv (i), 1861, p. 550.

Hab. N. India.

*dimidiata*, Putzeys, Notes Leyden Mus., ii, 1880, p. 191 ; Mid. Sumatra, iv, 6, t. 2,  
f. 2.

Hab. Sumatra.

*flavipes*, Wiedemann, Zool. Mag., ii (i), 1823, p. 60 : Dejean, Spec., ii, p. 442 : Lap-  
de Casteln., Hist. Nat. An. Art., Ins., i, p. 34.

*pallipes*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 33 ; *ib.*, (i), 1860, p. 548.

Hab. N. India, Simla.

*formosana*, Bates, Trans. Ent. S. Lond., 1873, p. 333 : Chaudoir, Bull. Mosc., lii (2),  
1877, p. 257.

Hab. Formosa.

*lineola*, Dejean, Spec., i, 1825, p. 184 : MacLeay, Annul. Javan., p. 27 : Lap. de  
Casteln., Hist. Nat. An. Art., Ins., i, p. 33 : Chaudoir, Bull. Mosc., lii (2),  
1877, p. 262.

var. *philippinensis*, Chaudoir, Bull. Mosc., lii (2), 1877, p. 262.

Hab. India, China, Hongkong, Philippines [*Ind. Mus.*, Madras].

*lugens*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 23.

Hab. Burma.

*mandibularis*, Lap. de Casteln., *Ét. Ent.*, 1834, p. 43.

Hab. India, Borneo.

*Mouhotii*, Chaudoir, Rev. Mag. Zool., (2s.), xxiii, 1872, p. 102.

Hab. Laos.

*obscura*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 23.

Hab. Burma.

*tristis*, Schmidt Goebel, *l.c.*, p. 23.

Hab. Burma.

*virgata*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 34.

Hab. India.

### Genus **DENDROCELLUS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 24 : Lacord., Gen. Col., i, p. 80 :  
Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 545 : Mun. Cat., p. 91.

*Desera* (Leach), Hope, Col. Man. ii, p. 96, 105.

- aeneipes* (*Drypta*), Wiedemann, Zool. Mag., ii (i), 1823, p. 60.  
Hab. India.
- discolor*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 24.  
Hab. Burma, Martaban [*Ind. Mus.*, Dhansiri Valley, Assam].
- geniculatus*, Klug, Jahrb. Insec., i, 1834, p. 52 : Schmidt Goebel, *l.c.*, *supra*, p. 25.  
Hab. India, Assam, Burma, Malacca, Java, Japan.
- longicollis* (*Drypta*), Dejean, Spec., i, 1825, p. 185.  
Hab. India.
- nepalensis* (*Desera*), Hope, Gray's Zool. Misc., 1831, p. 21.  
*flavipes*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 24 : *nec* Wied.  
*nec* Dejean. Calcutta.  
*rugicollis*, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 546.  
Hab. Nepal, Calcutta, Burma.
- parallelus*, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 101.  
Hab. Sumatra.
- unidentatus* (*Drypta*), MacLeay, Annul. Javan., i, 1825, p. 28.  
*coelestinus*, Klug, Jahrb. Insect., i, 1834, p. 54.  
Hab. Java.

### Genus GALERITA.

- Fabr., Syst. Eleuth., i, 1801, p. 214 : Brullé, Hist. Nat. Ins. Col., i, p. 166 : Schmidt Goebel, Faun. Col. Birm., p. 62 : Lacord., Gen. Col., i, p. 82 : Mun. Cat., p. 92, Leconte, Bull. Brookl. Ent. S., 1879, ii, p. 61 : Bates, Biol. Centr. Amer. Col., i (i), p. 164.
- attelaboides* (*Carabus*), Fabr., Spec. Ins., i, 1781, p. 305 ; Mant. Ins., i, p. 198 ; Ent. Syst., i, p. 132 ; Syst. Eleuth., i, p. 214 ; Oliv., Ent., iii, 35, p. 50, t. 6, f. 70 : Chaudoir, Bull. Mosc., xxiv (i), 1861, p. 560.  
? *leptodera*, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 559.  
Hab. India, (not S. America).
- indica*, Chaudoir, Bull. Mosc., xxxiv (2), 1861, p. 557.  
Hab. N. India.
- nigripennis*, Chaudoir, *l.c.* p. 557.  
Hab. Dekhan.
- orientalis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 26 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.  
Hab. Burma, Bhamo.
- peregrina*, Dohrn, Stettin. Ent. Zeit., xli, 1880, p. 291.  
Hab. Hongkong.
- ruficeps*, Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 556 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.  
Hab. N. India ; Burma, Bhamo.

Genus **ZUPHIUM.**

Latreille, Gen. Crust. & Ins., i, 1806, p. 198 : Lap. de Casteln., *Monograph*, Silb. Rev. i, p. 251 : Lacord., Gen. Col., i, p. 85 : Brullé, Hist. Nat. Ins. Col., i, p. 174 : Mun. Cat., p. 98 : Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 310 : Leconte, Bull. Brookl. Ent. Soc., 1879, p. 61 : Bates, Biol. Centr. Amer. Col., i (1), p. 166.

*Zophium*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 27.

*maculatum*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 28 : Chaudoir, Rev. Mag. Zool., 1872, p. 105.

*vittigerum*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 28.

Hab. Burma, Martaban [*Ind. Mus.*, China].

*erythrocephalum*, Chaudoir, Bull. Mosc., xxxv (2), 1862, p. 311.

Hab. India, Malabar.

*inconspicuum*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 30.

Hab. Burma.

*modestum*, Schmidt, Goebel, *l. c.*, p. 29.

Hab. N. India, Burma.

*olens* (*Carabus*), Fabr., Ent. Syst., i, 1792, p. 139 ; *id.* (*Galerita*), Syst. Eleuth., i, p. 215 : Olivier, Ent., iii, 35, p. 94, t. 13, f. 156 : (*Zuphium*) Dejean, Spec., i, p. 192 ; *id.*, Ic. Col. Eur. i, t. 10., f. 3 : Brullé, Hist. Nat. Ins. Col., i, p. 175, t. 6, f. 1 : Lap. de Casteln., *Mon.*, p. 253 : Schmidt Goebel, Faun. Col. Birm., p. 28 ; Duval, Gen. Carab., t. 21, f. 105 : Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 311.

*longiusculum*, Chaudoir, Bull. Mosc., xv (4), 1842, p. 804 : *id.*, xxxv (4), 1862, p. 312.

*rufifrons*, Chaudoir, *l. c.*, (4), 1862, p. 311.

Hab. S. Europe, N. Africa, Asia Minor, Maulmain, Siam.

*piceum*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 29.

Hab. Burma.

*pubescens*, Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 182.

Hab. Ceylon.

*siamense*, Chaudoir, Rev. Mag. Zool., (2 s), xxiii, 1872, p. 104.

Hab. Siam.

Genus **AGASTUS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 30 : Lacord., Gen. Col., i, p. 87 : Mun. Cat., p. 95.

*lineatus*, Schmidt Goebel, *l. c.*, p. 91.

Hab. Burma.

*ustulatus*, B. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 876.

Hab. Singapore.

**MORMOLYCINI**, Horn, Gen. Carab., p. 149.

Genus **MORMOLYCE.**

Hagenbach, Nov. Gen. Col., 1825 : Brullé, Hist. Nat. Ins. Col., i, p. 310 : Lacord., Gen. Col. i, p. 144 : Mun. Cat., p. 152 : Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 886.

*Castelnaudii*, Deyrolle, Ann. Soc. Ent. Fr., (2s.) iv, 1862, p. 314, t. 11, f. 3.

Hab. Malacca.

*Hagenbachii*, Westwood, Ann. Mag. N. H., (3s.) ix, 1862, p. 96 : Deyrolle, *l. c. supra*, p. 313, t. 11, f. 2.

*blattoides*, Thomson, Mon. Mormolyce, 1862, p. 8.

Hab. Sumatra.

*phylloides*, Hagenbach, Nov. Gen. Col., 1825, fig. *a-b*. : Gray, Griffith's Anim. Kingd., Ins. i, 1832, t. 25, f. 7 : Brullé, Hist. Nat. Ins., Col. i, p. 313, t. 11, f. 2 : Lap. de Casteln., Hist. Nat. Ins., i, p. 119, t. 7, f. 3 : Deyrolle, *l. c. supra*, t. 11., f. 1 : Verhuel, Ann. Soc. Ent. Fr., 1847, p. 344, t. 7, f. 1-6 : Overdijk, Mém. Ent. S. Pays-Bas, i, 1857, p. 41.

var. *borneensis*, Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 886, fig.

Hab. Java, Borneo, ? New Guinea [*Ind. Mus.*, Singapur].

**LEBIINI**:—Horn, Trans. Amer. Ent. Soc., x, 1882, p. 126 : Gen. Carab., p. 155 :

Leconte & Horn, Class. Col., p. 42.

*Lebides*, pt, Lacordaire, Gen. Col., i, p. 102.

*Pericalides*, Lacordaire, *l. c.*, p. 137.

Includes *Tetragonoderini*, Chaudoir, Bull. Mosc., li (3), 1876, p. 28.

### Genus **CYCLOSOMUS**.

Latreille, Règne Anim., ii, 1829, p. 394 : Dejean, Spec., iv, p. 23 : Lacord. Gen. Col., i, p. 253 : Mun. Cat., p. 248 : Chaudoir, Bull. Mosc., li (3), 1876, p. 29.

*dytiscoides* (*dytiscoides*), Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 132 : Ann. Mag. N. H., (2s.) xx, 1857, p. 272 : Chaudoir, Bull. Mosc., li (3), 1876, p. 31.

Hab. Ceylon, Colombo.

*flexuosus*, Fabricius, Syst. Ent., 1775, p. 246 ; Spec. Ins., i, p. 311 ; Mant. Ins., i, p. 203 ; Ent. Syst., i, p. 180 ; (*Scolytus*) Syst. Eleuth., i, p. 247 : Lap. de Casteln., Hist. Nat. Ins., i, p. 96 : Lacord. Gen. Col. : Atlas, t. 10, f. 4 *a-b*. : Gray, Griffith, An. Kingd., Ins. i, 1832, t. 8, f. 12 : Brullé, Hist. Nat. Ins. Col., ii, p. 140 : Chaudoir, Bull. Mosc., li (3), 1876, p. 32.

*suturalis* (*Scolytus*), Wiedemann, Zool. Mag., i (3), 1819, p. 169.

Hab. Bengal, Hongkong.

*marginatus*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 200 : Chaudoir, *ib.*, li (3), 1876, p. 32.

Hab. India.

### Genus **TETRAGONODERUS**.

Dejean, Spec., iv, 1829, p. 485 : Schmidt Goebel, Faun. Col. Birm., p. 92 : Lacord., Gen. Col., i, p. 132 : Mun. Cat., p. 144 : Chaudoir, *Monograph*, Bull. Mosc., li (3), 1876, p. 33 : Syn. Amer. Sp., Horn, Trans. Amer. Ent. S., iv, 1872, p. 136 : Bates, Biol. Centr. Amer., Col., i (i), p. 171.

*Carabus*, Fabr. *et vet. auct* : *Bembidium*, Wied., Germar : *Dromius*, Reiche, Putzeys, Dejean.

*Peronoscelis*, Chaudoir, *Mon.*, p. 56.

*arcuatus*, Dejean, Spec., iv, 1829, p. 495 : Chaudoir, *Mon.*, p. 38.

Hab. India, Egypt, Senaar.

*cursor*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 201.

Hab. Ceylon, Kandy.

*dilatatus* (*Bembidium*), Wiedemann, Zool. Mag., ii (i), 1823, p. 61 ; Chaudoir, *Mon.*, p. 41.

Hab. India, Bengal.

*discopunctatus*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 456 ; *id.*, *Mon.*, p. 48.

Hab. N. India, Simla.

*imbriatus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 202.

Hab. Ceylon, Kandy.

*notaphioides*, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 99 : Bates, *l. c. supra*, p. 201 : Chaud., *Mon.*, p. 54.

Hab. Ceylon, Colombo, Dikoya.

*punctatus* (*Bembidium*), Wiedemann, Zool. Mag., ii (i), 1823, p. 61 : Dejean, Spec.

iv, p. 505 : Schmidt Goebel, Faun. Col. Birm., p. 92 : Chaud., *Mon.*, p. 48.

Hab. India, Bengal, Dekhan.

*quadrinotatus* (*Carabus*), Fabr., Ent. Syst. Suppl., 1798, p. 55 ; *id.*, Syst. Eleuth.

i, p. 186 ; Dejean, Spec., iv, p. 491 : Lap. de Casteln., Hist. Nat. Ins., i, p. 89 :

Chaud., *Mon.*, p. 41.

Hab. India, Ceylon [*Ind. Mus.*].

*quadrisignatus*, Quensel, Schönherr, Syn. Ins., i, 1806, p. 212 note : Dejean, Spec.

iv, p. 491 : Chaud., *Mon.*, p. 41.

Hab. India, Hongkong [*Ind. Mus.*, Madras].

*rhombophorus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 93 : Chaud., *Mon.*, p. 48.

Hab. Burma, Martaban.

*trifasciatus*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 455 ; *id.*, *Mon.*, p. 48.

Hab. N. India.

### Genus **MNUPHORUS.**

Chaudoir, Berlin. Ent. Zeits., 1873, p. 55 ; *id.*, Bull. Mosc., li (3), 1876, p. 69.

*discophorus*, Chaudoir, *l. c.*, p. 69.

Hab. N. India, Simla.

### Genus **TILIUS.**

Chaudoir, Bull. Mosc., li (3), 1876, p. 71.

*Lionychus*, Chaudoir, *olim* (*nec* Wissmann).

*holosericeus*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 68 ; *id.*, li (3), 1876, p. 72.

Hab. N. Bengal.

### Genus **DICTYA.**

Chaudoir, Bull. Mosc., xliiii, (2), 1870, p. 116, 123.

*cribricollis*, Morawitz, Bull. Ac. Petr., v. 1863, p. 245 : Chaudoir, *l. c. supra*, p. 124.

Hab. E. Siberia, N. China, Canton (*Putzeys*.).



Genus **NEMATOPEZA.**

Chaudoir, Bull. Mosc., xliii (2), 1870, p. 146.

*baconii*, Chaudoir, *l. c. supra*, p. 150.  
Hab. N. India.

*basalis* (*Lebia*), Chaudoir, *l. c.*, xxv (i), 1852, p. 43 ; *id.*, *ib.*, xliii (2), 1870, p. 149.  
Hab. N. India.

*decora*, Chaudoir, *l. c.*, xliii (2), 1870, p. 150.  
Hab. N. India.

Genus **LEBIA.**

Latreille, Hist. Nat. Ins., viii, 1804, p. 247 : Lacord., Gen. Col., i, p. 127 : Mun. Cat., p. 136 : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 226, *tab. syn.* : Chaudoir, *l. c.*, xliii (2), 1870, p. 111, 162 : Bates, Biol. Centr. Amer., Col., i (i), p. 222.

*Echinurus*, Leach, Endiab. Encycl., 1818.

*Homalops*, Motschulsky, Käfer Russl., 1845, p. 42.

*Lamprias*, Bonelli, Obs. Ent., 1809, *tab. syn.*

*Lebida*, Motschulsky, Et. Ent., 1862, p. 51 ; *id.*, Bull. Mosc., xxxvii (3), 1864, p. 225.

*Lebistina*, Motschulsky, Bull. Mosc., *l. c.*, p. 227 : Chaud., *l. c.*, lii (2), 1877, p. 218.

*Lionedya*, Chaudoir, Bull. Mosc., xliii (2), 1870, p. 126.

*Omalomorpha*, Motschulsky, Ins. Sib., 1842, p. 42.

*Boysii*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 70 ; xliii (2), 1870, p. 223.  
Hab. N. India, Simla.

*calycophora*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 44.  
Hab. Burma.

*chinensis*, Bohem., Freg. Eug. Resa, Col., 1858, p. 6 : Chaud., Bull. Mosc., xliii (2), 1870, p. 163.  
Hab. Hongkong [*Ind. Mus.*, China.].

*circumdata*, Schmidt Goebel, Faun. Col., Birm., 1846, p. 44 : Chaud., Bull. Mosc., xliii (2), 1870, p. 224.  
Hab. Burma.

*elevata* (*Carabus*), Fabr., Ent. Syst., i, 1792, p. 162 ; Syst. Eleuth., i, p. 204 : Chaudoir, Bull. Mosc., xxvii (i) 1854, p. 133 : Schmidt Goebel, Faun. Col., Birm., p. 43.

*massiliensis*, Fairmaire, Ann. Soc. Ent. Fr. 1849, p. 419 : Brullé, Silb. Rev., ii, p. 108.

*unifasciata*, Dejean, Spec., v, 1831, p. 339.  
Hab. S. Europe, Burma.

*exsanguis*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 209.  
Hab. Ceylon, Dikoya.

*fuscula*, Chaudoir, Bull. Mosc., xliii (2), 1870, p. 221.  
Hab. India, Simla.

*gressoria*, Chaudoir, *l.c.*, p. 222.

Hab. N. India.

*infuscata*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 227.

Hab. India.

*sellata*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 45.

Hab. Burma.

*tau*, Schmidt Goebel, *l.c.*, p. 45.

Hab. Burma.

### Genus **STEPHANA.**

Chaudoir, Bull. Mosc., xlv (i), 1871, p. 55.

*princeps* (*Lebia*), Chaudoir, *l.c.*, xxv (i), 1852, p. 41 ; *id.*, xlv (i), 1871, p. 56.

Hab. N. India.

### Genus **PHYSODERA.**

Eschscholtz, Zool. Atlas, ii, 1829, p. 8 : Schmidt Goebel, Faun. Col. Birm., p. 46 ;

Lacord., Gen. Col., i, p. 130 ; Mun. Cat., p. 143.

*Davidis*, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 92.

Hab. China, Fuhkien.

*Dejeanii*, Eschscholtz, Zool. Atlas, ii, 1829, p. 8, t. 8, f. 6 : Gray, Griffith's Anim.

Kingd. Ins., i, t. 19 f. 4 : Lacord., Gen. Col., i, p. 130, Atlas, t. 4, f. 3 :

Schmidt Goebel, Faun. Col. Birm., p. 46.

Hab. Burma ; Philippines, Manilla [*Ind. Mus.*, Andamans].

*Eschscholtzii*, Parry, Trans. Ent. S. Lond., v, 1849, p. 179, t. 18, f. 2.

Hab. Ceylon, Peradeniya (*Bates*).

### Genus **EUPLYNES.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 52 : Lacord., Gen. Col., i, p. 131 :

Mun. Cat., p. 380 : Bates, Trans. Ent. S. Lond., 1883, p. 264 ; *id.*, Biol. Centr.

Amer. Col., i (i), p. 158.

*bispinus*, Motschulsky, Et. Ent., 1859, p. 33.

Hab. Java.

*cyanipennis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 52 : Bates, Ann. Mag.

N. H., (5s.) xvii, p. 147.

*Schmidtii*, Chaudoir, Ann. Soc. Ent. Fr., (3s.) vii, 1859 p. 360.

Hab. India, Burma.

*Dohrni*, Nietner, Ann. Mag. N. H., (3s.) ii, 1853, p. 429 : Bates, l. c., (5s.) xvii, 1886, p. 147.

Hab. Ceylon.

### Genus **ALLOCOTA.**

Motschulsky, Et. Ent., 1859, p. 29 : Mun. Cat., p. 146 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 203,

*viridipennis*, Motsch., Et. Ent., 1859, p. 29, f. 3 : Chaudoir, *l.c. supra*, p. 205.

Hab. Singapur, Malacca, Java.

Genus **PARENA.**

Motschulsky, Et. Ent., 1859, p. 31 : Mun. Cat., p. 146 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 207.

*bicolor*, Motschulsky, Et. Ent., 1859, p. 32.  
Hab. Java.

Genus **LACHNODERMA.**

W. MacLeay, Trans. Ent. S. N. S. Wales, ii, 1873, p. 321 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 212 : R. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 858.

*hirsutus* (*Singilis*), Bates, Trans. Ent. S. Lond., 1873, p. 333 ; *ib.*, 1883, p. 285.  
Hab. Hongkong.

Genus **SCALIDION.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 63 : Lacord., Gen. Col., i, p. 135 : Mun. Cat., p. 147.

*hilare*, Schmidt Goebel, *l.c. supra*, p. 64.  
Hab. Burma.

Genus **COPTODERA.**

Dejean, Spec., i, 1825, p. 273 : Lacord., Gen. Col., i, p. 140 : Mun. Cat., p. 149 : *Mémoire*, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 163.

*Agonocheila*, Chaudoir, Bull. Mosc., xxi, 1848, p. 119.

*Belonognatha*, Chaudoir, *l.c.*, xvi (3), 1843, p. 383 : Lacord., Gen. Col., i, p. 142.

*Rhinocheila*, Montrouzier, Ann. Soc. Linn. Lyon, 1864, p. 57 : Mun. Cat., p. 141.

*bicincta*, Hope, Trans. Ent. S. Lond., iv, 1845, p. 14 : Chaudoir, *Mém.*, p. 187.

Hab. Canton, Hongkong.

*discoguttata*, Chaudoir, *Mém.*, 1868, p. 195.

Hab. Borneo, Celebes.

*elegantula*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 54 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 111.

Hab. Burma, Bhamo, Teintso, Tenasserim.

*flexuosa*, Schmidt Goebel, *l.c.*, p. 55 : Chaudoir, *Mém.*, p. 196.

Hab. Burma, Singapur, Borneo.

*interrupta*, Schmidt Goebel, *l.c.*, p. 53 : Chaudoir, *Mém.*, p. 194.

Hab. Burma, Siam, Borneo, Ceylon, Colombo (Bates).

*ocellata*, Chaudoir, *Mém.*, p. 188.

Hab. N. India.

*transversa*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 54 : Chaudoir, *Mém.*, p. 165.

Hab. Burma.

*tetrastigma*, Chaudoir, *Mém.*, p. 174.

Hab. Borneo, Sarawak.

*piligera*, Chaudoir, Col. Novit., 1883, p. 20.

Hab. Tibet, Moupin.

### Genus **LIOPTERA.**

Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 208.

Plato, Bates, Trans. Ent. S. Lond., 1883, p. 281, note.

Hab. N. Borneo.

*quadriguttata*, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 208.

Hab. Philippines.

### Genus **MOCHTHERUS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 76 : Lacord., Gen. Col., i, p. 137 : Mun. Cat., p. 147 : Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 240.

*Dromius*, pt. MacLeay.

*Thyreopterus*, pt. Dejean, Spec., v, 1831, p. 445.

*Cyrtopterus*, pt. Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106.

*immaculatus*, Redtenb., Reise Novara, Zool., ii, Col., 1867, p. 7 : Chaudoir, *Mém.*, p. 243.

Hab. Malacca, Java.

*tetraspilotus* (*Dromius*), MacLeay, Annul. Javan., 1825, p. 25 : Schaum, Berlin Ent. Zeits., 1860, p. 187 : Chaudoir, *Mém.*, p. 241.

*angulatus* (*Mochtherus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 76.

*quadrinotatus* (*Cyrtopterus*), Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106 : Gerst., Wiegmann Archiv. Naturg., 1863, p. 75.

*retractus* (*Panagæus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203.

*tetrasemus* (*Thyreopterus*), Dejean, Spec., v, 1831, p. 448.

Hab. India, Malabar, Burma, Java, Borneo, Ceylon, Colombo, Galle (*Bates*), [*Ind. Mus.*, Andaman Islands].

### Genus **DOLICHOCTIS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 62 : Lacord., Gen. Col., i, p. 136 : Mun. Cat., p. 147 : Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 245.

*Cyrtopterus*, pt. Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106.

*Coptodera*, pt. Dejean.

*angulicollis*, Chaudoir, *Mém.*, p. 250.

Hab. Burma, Rangoon.

*fasciola*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 205.

Hab. Ceylon, Balangoda.

*gilvipes*, Dejean, Spec. v, 1831, p. 396 : Chaud., *Mém.*, p. 248.

Hab. Philippines, Manila.

*gonioderus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 204.

Hab. Ceylon, Kitugalle.

*marginifer* (*Dromius*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 202 ; id, Bates, *l.c. supra*, p. 210.

*parvicollis*, Chaudoir, *Mém.*, p. 249.

Hab. Borneo.

*quadriplagiata*, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 106, t. 9, f. 4 : Chaudoir *Mém.* p. 245.

*marginicollis* (*Colpodes*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 51.

Hab. Ceylon, Anarajapura.

*rotundatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 77 : Chaud., *Mém.* p. 241,

246 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1882, p. 111.

Hab. Burma, Bhamo, Teintso, Shwegu.

*striata*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 62 : Chaudoir, *Mém.* p. 246.

Hab. Burma, Isl. Aru, ? Celebes.

*tenuifimbata*, Oberthür, Notes Leyden Mus., v, 1883, p. 219.

Hab. Sumatra, Serdang.

*tetracolon*, Chaudoir, *Mém.*, p. 248.

Hab. Borneo, Sarawak [*Ind. Mus.*, Sikkim].

*vitticollis*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 204.

Hab. Ceylon, Dikoya.

### Genus **BRACHYCTIS**.

Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 252.

*rugulosa*, Chaudoir, *l.c.*, p. 252.

Hab. Borneo, Sarawak.

### Genus **PELIOCYPAS**.

Schmidt Goebel, Faun. Col. Birm., 1846, p. 33 : Lacord., Gen. Col., i, p. 116 : Mun. Cat. p. 127.

*hamatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 35.

Hab. Burma.

*luridus*, Schmidt Goebel, *l.c.*, p. 35.

Hab. Burma.

*signifer*, Schmidt Goebel, *l.c.*, p. 35 : Bates, Ann. Mag. N. H. (5s.) xvii, p. 209.

Hab. Burma.

*suturalis*, Schmidt Goebel, *l.c.*, p. 34.

Hab. Burma.

*uniformis*, Fairmaire, Ann. Soc. Ent. Fr., (6 s.) viii, 1888., p. 334.

Hab. Tonkin.



Genus **DROMIUS.**

Bonelli, Obs. Ent., i, 1809, tabl. syn : Lacord., Gen. Col., i, p. 119 : Mun. Cat., p. 128 : Schaum, Ins. Deutschl., i (i), p. 263.

*Crossonychnus*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 97.

*Lobius*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 230.

*Microlestes*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 41.

*Philorhizus*, Hope, Col. Man., 1838, p. 66.

*exilis* (*Microlestes*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 42.

Hab. Burma.

*inconspicuus* (*Microlestes*), Schmidt Goebel, *l.c.*, p. 41.

Hab. India.

*orthogonioides*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 205.

Hab. Ceylon, Dikoya.

*steno*, Bates, *l.c.*, p. 206.

Hab. Ceylon, Nuwara Eliya.

Genus **BLECHRUS.**

Motschulsky, Bull. Mosc., xx (3), 1847, p. 219 ; xxi (2), 1848, p. 543 ; Et. Ent., 1858, f. 2, 3 : Mun. Cat., p. 131.

*xanthopus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 206.

Hab. Ceylon, Colombo.

Genus **METABLETUS.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 38 : Chaudoir, Bull. Mosc., xxi (i), 1848, p. 94 : Lacord., Gen. Col., i, p. 122 : Mun. Cat., p. 132.

*Bomius*, pt., Leconte, Ann. Lyc. Nat. Hist. New York, v, 1852, p. 177 :

Lacord., Gen. Col., i, p. 120.

*Charopterus*, Motsch., Et. Ent., 1858, p. 155.

*Dromoceryx*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 40.

*angularis* (*Dromoceryx*), Schmidt Goebel, *l.c.*, p. 41.

Hab. Burma.

*dorsalis* (*Dromoceryx*), Schmidt Goebel, *l.c.*, p. 40.

Hab. Burma.

*quadripunctatus*, Schmidt Goebel, *l.c.*, p. 39 : Bates, Trans. Ent. S. Lond., 1883, p. 284.

Hab. Bengal, Japan.

\* *tartareus*, Bates, Proc. Zool. S. Lond., 1878, p. 719.

Hab. Between Yangi Hissar and Sirikol [*Ind. Mus.*, type].

Genus **APRISTUS.**

Chaudoir, Enum. Carab. Caucas., 1846, p. 62 : *id.*, Bull. Mosc., xxiii (i), 1850, p. 65 : Lacord., Gen. Col., i, p. 123 : Mun. Cat., p. 134.

*aeneipennis* (*Lionychus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 37 : Fairm.

Ann. Soc. Ent. Fr., (6s.) viii, 1888, p. 335.

Hab. Burma, Tonkin.

*aeneomicans*, Chaudoir, Bull. Mosc. xxiii (i), 1850, p. 66.

Hab. N. India, Simla.

*subtransparens*, Motsch., Bull. Mosc. xxxiv (i), 1861, p. 104; Bates, Ann. Mag. N.H., (5s.) xvii, 1886, p. 206.

Hab. Ceylon, Nuwara Eliya, Hadley, Dikoya (Bates).

### Genus **APRISTOMORPHUS.**

Motschulsky, Bull. Mosc. xxxiv (i), 1861, p. 104.

*sexpunctatus*, Motschulsky, *l.c.*, p. 105, t. 9, f. 2.

Hab. Ceylon, Nuwara Eliya.

### Genus **LIONYCHUS.**

Wissmann, Stettin Ent. Zeit., vii, 1846, p. 25; Lacord., Gen. Col., i, p. 122: Mun. Cat., p., 133: Schmidt Goebel, Faun. Col. Birm., p. 36.

*albi vittis*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 207.

Hab. Ceylon, Peradeniya.

*marginellus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 37, t. 3, f. 3.

Hab. Burma.

### Genus **TETRAGONICA.**

Motschulsky, Et. Ent., 1859, p. 26; Mun. Cat., p. 136; Bates Ann. Mag. N. H., (5s.) xvii, 1886, p. 207.

*catenata*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 208.

Hab. Ceylon, Bogawantalawa.

*euproctoides*, Bates, *l.c.*, p. 209.

Hab. Ceylon, Colombo.

*fusca*, Motschulsky, Et. Ent., 1859, p. 28, t. 1, f. 2.

Hab. Ceylon, Nuwara Eliya, Dikoya, Bogawantalawa (*Bates*).

*intermedia*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 208.

Hab. Ceylon, Horton Plains.

*mellea*, Bates, *l.c.*, p. 208.

Hab. Ceylon, Colombo.

*repandens*, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51: Bates, *l.c. supra*, p. 210.

Hab. Ceylon.

### Genus **BRACHICHILA.**

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., 1868, p. 123.

*hypocrita*, Chaudoir, *Mém.*, *l.c.*, p. 123.

Hab. Hongkong.

### Genus **TANTILLUS.**

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., 1868, p. 126.

*brunneus*, Chaudoir, *Mém.*, *l.c.*, p. 126.

Hab. Ceylon, Dikoya (*Bates*).

*vittatus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 202.

Hab. Ceylon, Bogawantalawa.

Genus **SINURUS.**

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 129.

*opacus*, Chaudoir, *Mémoire*, p. 130.

Hab. Borneo, Sarawak.

Genus **SERRIMARGO.**

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 134.

*Thyreopterus*, pt. Schaum, Chaudoir *olim*.

*guttiger*, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 189, t. 3. f. 5 : Chaudoir, *Mém.* p. 135.

Hab. Borneo, Sarawak, Malacca.

*verrucifer*, Chaudoir, Rev. Mag. Zool. (2s.) xxi, 1869, p. 171 ; *Mém.*, p. 135.

Hab. Malacca.

Genus **PERIPRISTUS.**

Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 135.

*ater* (*Thyreopterus*), Lap. de Casteln., Et. Ent., 1834, p. 149 : Schmidt Goebel, Faun. Col. Birm., p. 79 : Chaudoir, *Mém.*, p. 136 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 110.

Hab. Burma, Malacca, Bhamo, Tenasserim.

Genus **THYREOPTERUS.**

Dejean, Spec., v, 1831, p. 445 : Lacord., Gen. Col., i, p. 143 : Schaum, Berlin. Ent. Zeits., iv, 1860, p. 186 : Mun. Cat., p. 151 : Chaudoir, *Mémoire*, Ann. Soc. Ent. Belg., xii, 1868, p. 141.

*Thysanotus*, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 123.

*impressus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 80 : Chaudoir, *Mém.*, p. 142 : *gen. dub.*

Hab. Burma.

Genus **MISCELUS.**

Klug, Jahrb. Insect., 1834, p. 82 : Lap. de Casteln., Hist. Nat. An. Art. Ins., i, p. 311 : Lacordaire, Gen. Col., i, p. 146 : Chaudoir, Berlin. Ent. Zeits., iv, 1861, p. 125 : *id.*, Ann. Soc. Ent. Belg., xii, 1868, p. 152 : Mun. Cat., p. 154.

*Leptodaetyla*, Brullé, Hist. Nat. Ins., iv, 1837, p. 130.

*convexicollis*, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 724.

Hab. Borneo, Sarawak.

*javanus*, Klug, Jahrb. Insect., 1834, p. 82, t. 1, f. 9 : Lap. de Casteln., Hist. Nat. An. Art. Ins., i, p. 32 : Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 723.

*apicalis* (*Leptodaetyla*), Brullé, Hist. Nat. Ins., iv, 1837, p. 130, t. 4, f. 1.

Hab. Java, Borneo, Sarawak [*Ind. Mus.*, Andaman Islands].

*paradoxus*, Putzeys, Ann. Mus. Civ. Gen., vii, 1875, p. 724.

Hab. Philippines.

- rufiventris*, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 202.  
*ceylonicus*, Chaudoir, Berlin Ent. Zeits., v, 1861, p. 125.  
 Hab. Ceylon, Colombo (*Bates*).  
*unicolor*, Putzeys, Mém. Soc. Liège, ii, 1845, p. 375 ; *id.*, Ann. Mus. Civ. Gen., vii, 1875, p. 725.  
 Hab. Java.

### Genus **HOLCODERUS.**

- Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 153.  
*auripennis*, Chaudoir, Bull. Mosc., lii (2), 1877, p. 198.  
 Hab. Penang.  
*limbipennis*, Chaudoir, *L.c.*, p. 199.  
 Hab. Penang.  
*praemorsus*, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 153.  
 Hab. Ceylon, Dikoya, Bogawantalawa (*Bates*).

### Genus **CATASCOPIUS.**

- Kirby, Trans. Linn. S. Lond., xiv, 1825, p. 94 : Schmidt Goebel, Faun. Col. Birm., p. 80 : Lacord., Gen. Col., i, p. 145 : Mun. Cat., p. 152 : W. W. Saunders, Trans. Ent. S. Lond., (3s.) i, 1863, p. 455 : Chaudoir, Bull. Mosc., xxi (i), 1848, p. 118 ; *id.*, Berlin. Ent. Zeits., v, 1861, p. 116 ; *id.*, Ann. Soc. Ent. Belg., xii, p. 158.  
*Cyphosoma*, Hope, Ann. Mag. N. H., ix, p. 426.  
*aeneipennis*, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 118.  
 Hab. Dekhan.  
*aeneus*, Saunders, Trans. Ent. S. Lond., 1863, p. 467, t. 17, f. 2 *a-b*.  
 Hab. Borneo, Sarawak.  
*aequatus*, Dejean, Spec., v, 1831, p. 452 : Lap. de Casteln., Hist. Nat. Ins., i, p. 54.  
 Hab. Philippines, Manila.  
*andamanensis*, Chaudoir, Bull. Mosc., lii (2), 1877, p. 200.  
 Hab. Andaman Islands.  
*angulatus*, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 117.  
*elegans*, MacLeay, Annul. Javan., 1825, p. 15 (*neo Fabr.*).  
*facialis*, Dejean, Spec., v, 1831, p. 452 (*neo Wied.*).  
 var. *illustris*, Mannerheim, Bull. Mosc., xxxiii (1), 1850, p. 89.  
 „ *oxygonus*, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 117 ; Rev. Mag. Zool., (2s.) xxiii, 1872, p. 244 : Saund., Trans. Ent. S. Lond., 1863, p. 468.  
 Hab. Malacca, Java, Borneo, Amboina, Ternate, Macassar.  
*brachypterus*, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 119 ; Saund., Trans. Ent. S. Lond., 1863, p. 468.  
 Hab. Borneo, Sarawak, Singapur.  
*cingalensis*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 203.  
 Hab. Ceylon, Kandy, Balangoda.  
*cupreicollis*, Waterhouse, Trans. Ent. S. Lond., 1877, p. 1.  
 Hab. Andaman Islands.

*cupripennis* (*Pericalus*), Thomson, Arch. Ent. i, 1857, p. 282: Chaudoir, Berlin-Ent. Zeits., v, 1861, p. 122.

Hab Singapur, Borneo, Sarawak.

*cyanellus*, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 113.

Hab. Nepál.

*cyanipennis*, Chaudoir, *l.c.*, xxvii (i), 1854, p. 130.

Hab. N. India.

*elegans*, Fabr., Syst. Eleuth., i, 1801, p. 184: Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 354; Berlin. Ent. Zeits., v, 1861, p. 120: Lap. de Casteln., Hist. Nat. Ins. Col., i, p. 54, t. 4, f. 2.

*amoenus*, Chaudoir, Berlin Ent. Zeits., v, 1861, p. 120: Rev. Mag. Zool. (2s) xxiii, 1872, p. 247, 250: Saund., Trans. Ent. S. Lond., 1863, p. 468.

var. *australasiae*, Hope, Ann. Mag. N. H., ix, 1842, p. 426.

„ *celebensis*, Thoms., Arch. Ent., i, 1857, p. 282.

? *elegans*, Schmidt Goebel, Faun. Col. Birm. p. 83, *nec* Weber.

? *lateralis*, Brullé, Hist. Nat. Ins., iv, 1837, p. 233.

*nitidulus*, Lap. de Casteln., Et. Ent., 1834, p. 60.

var. *cyaneus*, Chaudoir, Rev. Mag. Zool., 1872, p. 247.

Hab. Java, Sumatra, Philippines, Ambina, Aru, Dorey, Batchian, Ceram, Celebes, Australia, Cape York, New Guinea.

*elevatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 84.

Hab. Burma, Martaban.

*excisus*, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 303.

Hab. India.

*facialis*, Wiedemann, Zool. Mag., i (3), 1819, p. 165: Dejean, Spec., i, p. 329; *Ic.*, ii, p. 116, t. 7, f. 8: Brullé, Hist. Nat. Ins. Col., i, p. 232: Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 352; *id.*, Berlin Ent. Zeits., v, 1861, p. 116: Saund., Trans. Ent. S. Lond., 1863, p. 468: Bates, Ann. Mus. Civ. Gen., (2s.) viii, 1889, p. 12.

*Hardwicki*, Kirby, Trans. Linn. S. Lond., xvi, p. 98, t. 3, f. 1.

Hab. Bengal, Burma, Bhamo, Malacca, Ternate, Batchian, Ceram [*Ind. Mus.*, Sibságar, Assam].

*fuscoaeneus*, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 247, 249.

*aeneus*, Motsch., Bull. Mosc., xxxvii (4), 1864, p. 303 (*nec* Saund.)

Hab. Penang, Malacca.

*Goebelli*, Gemm. & Har., Mun. Cat., 1863, p. 153: Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 245.

*facialis*, Schmidt Goebel, Faun. Col. Birm., p. 81 (*nec* Wied.): Chaud., Bull. Mosc., xxiii (2), 1850, p. 352.

? var. *basalis*, Chaudoir, Rev. Mag., *l.c.*, p. 245.

Hab. Burma, Malacca.

*gracilis*, Oberthür, Notes Leyden Mus., v, 1883, p. 220.

Hab. Sumatra, Serdang; Philippines, Mindanao.

*punctipennis*, Saunders, Trans. Ent. S. Lond., 1863, p. 464, t. 18, f. 4 a-b.

Hab. Singapur.



- reductus*, Walker, Ann. Mag. N. H., (2s.) ii, 1858, p. 203 : ? *nec* Chaudoir, Berlin Ent. Zeits., v, 1861, p. 117 ; Rev. Mag. Zool., (2s.) xxiii, 1872, p. 245 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 210.  
Hab. India, Ceylon, Malacca.
- regalis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 84.  
Hab. Burma.
- ? *rufipes*, Gory, Ann. Soc. Ent. Fr., 1833, p. 204 : Chaud., Rev. Mag. Zool., (2s.) xxiii, 1872, p. 269.  
*Subquadratus*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 302.  
Hab? India (*nec* Senegal).
- Schaumii*, Saunders, Trans. Ent. S. Lond., 1863, p. 457, t. 17, f. 3 *a-b*.  
Hab. Borneo, Sarawak.
- simplex*, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 246.  
Hab. Philippines, Mindanao.
- smaragdulus*, Dejean, Spec., i, 1825, p. 331 : Lap. de Casteln., Hist. Nat. Ins., i, p. 54 : Chaudoir, Berlin Ent. Zeits., v, 1861, p. 119.  
? *pauper*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 84.  
Hab. Java, Burma [*Ind. Mus.*, Andaman Islands].
- splendidus*, Saunders, Trans. Ent. S. Lond., 1863, p. 459, t. 17, f. 1*a-b*.  
*costulatus*, Chaudoir, Rev. Mag. Zool. 1863, p. 489 ; *ib.*, 1872, p. 249.  
Hab. Borneo, Sarawak.
- versicolor*, Saunders, *l. c. supra*, p. 463, t. 18, f. 1*a-b*.  
Hab. Sumatra.
- violaceus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 82.  
Hab. Burma, Maulmain.
- virens*, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 245.  
Hab. Celebes, ? India.
- Vollenhovenii*, Chaudoir, *l. c.*, p. 248.  
Hab. Sumatra.
- Whithillii*, Hope, Col. Man., ii, 1838, p. 164, t. 3, f. 2.  
Hab. India [*Ind Mus.*, Sikkim, Assam, Calcutta, Burma ].

### Genus PERICALUS.

- MacLeay, Annul. Javan., 1825, p. 15 : Schmidt Goebel, Faun. Col. Birm., p. 85 : Lacord., Gen. Col., i, p. 174 : Mun. Cat., p. 154 : Chaudoir, Bull. Mosc., xxi (i), 1848, p. 111 ; Berlin. Ent. Zeits., 1861, p. 123 ; *ib.*, Ann. Soc. Ent. Belg., xii, 1863, p. 158 : Schaum, Berlin. Ent. Zeits., iv, 1860, p. 189 : Bates, Ent. Mon. Mag., vi, 1869, p. 69.  
*Coeloproscopus*, Chaudoir, Bull. Mosc., xv (i), 1842, p. 839.  
*Pericallus*, Chaudoir, *auct.*
- cicindeloides*, MacLeay, Annul. Javan., 1825, p. 15, t. 1, f. 2 : Gray Griffith's Anim. Kingd., Ins., i, 1832, t. 15, f. 2 : Brullé, Hist. Nat. Ins., Col., i, p. 230 : Lap. de Casteln., Hist. Nat. Ins., i, p. 57.  
Hab. Java.

*guttatus*, Chevrolat, Mag. Zool., 1832, cl, ix, t. 46 : Brullé, Hist. Nat. Ins., Col., i, p. 231 : Lap. de Casteln., Hist. Nat. Ins., i, p. 57.

Hab. Java.

*laetus*, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 190.

Hab. Borneo.

*longicollis*, Chaudoir, Ann. Soc. Ent. Belg., xii, 1868, p. 159.

Hab. Malacca.

*ornatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 86.

Hab. Burma.

*quadrimaculatus* (*Catascopus*), MacLeay, Annul. Javan., 1825, p. 15 : Lap. de Casteln., Hist. Nat. Ins., i, p. 55, t. 4., f. 3 : (*Coeloprosopus*) Chaudoir, Bull. Mosc., xv (i), 1842, p. 839.

*quadrisignatus*, Lap. de Casteln., Ann. Soc. Ent. Fr., 1832, p. 392.

Hab. Java.

*tetrastigma*, Chaudoir, Berlin. Ent. Zeits., v, 1861, p. 123.

Hab. Singapur, Sarawak.

*undatus*, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 111.

Hab. Philippines.

*xanthopus*, Schaum, Berlin. Ent. Zeits., iv, 1860, p. 191.

Hab. Borneo.

### Genus CALLEIDA.

Dejean, Spec., i, 1825, p. 220 : Lacord., Gen. Col., i, p. 105 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 103 : Mun. Cat., p. 114 : Schmidt Goebel, Faun. Col. Birm., p. 32 ; Bates, Biol. Centr. Amer., Col i (i), p. 203.

*Calleida*, Chaudoir, *l.c. supra*.

*Trigonothops*, W. MacLeay, Trans. Ent. S. N. S. W., i, 1864.

*chloroptera*, Dejean, Spec., v, 1831, p. 340 : Schmidt Goebel, Faun. Col. Birm., p. 33 : Chaud., *Mon.*, p. 112.

Hab. India, Java.

*cupreo-micans*, Oberthür, Notes Leyden Mus., v, 1883, p. 218.

Hab. E. Sumatra, Serdang.

*femoralis*, Chaudoir, *Mon.*, p. 112.

Hab. Dekhan.

*lativittis*, Chaudoir, *Mon.*, p. 113.

Hab. Dekhan.

*lepidia*, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 6, t. 1, f. 2 : Chaudoir, *Mon.*, p. 112.

Hab. Hongkong, Japan.

? *onypterygoides*, Chaudoir, *Mon.*, p. 123.

Hab. ? Dekhan, ? Colombia.

*propinqua*, Fleutiaux, Ann. Soc. Ent. Fr., (6s.) vii, 1887, p. 59.

Hab. Annam, Hué.

- splendidula* (*Carabus*), Fabr., Syst. Eleuth., i, 1801, p. 184: Dejean (*Calleida*), Spec. v, p. 341 : ? (*Lebia*) MacLeay, Annul. Javan., p. 26 : Schmidt Goebel, Faun. Col. Birm., p. 32 : Chaud., *Mon.*, p. 118.  
*rubricata* (*Calleida*), Motsch., Bull. Mosc., xxxvii (2), 1864, p. 238.  
 Hab. Bengal, Java, Hongkong, Shanghai.  
 ? *terminata*, Waterhouse, Trans. Ent. S. Lond., 1876, p. 11.  
 Hab. Borneo, Sarawak.

Genus **PLOCHIONUS.**

- Dejean, Spec., i, 1825, p. 250 : Hope, Col. Man., ii, t. 1, f. 6 : Schmidt Goebel, Faun. Col. Birm., p. 42 : Lacord., Gen. Col., i, p. 135 : Mun. Cat., p. 147 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 168 : Bates, Biol. Centr. Amer., Col., i (i), p. 197.  
*brunneus* (*Lebia*), Wiedemann, Zool. Mag., ii (i), 1823, p. 59 : *gen. dub.* ? *Lebia*.  
 Hab. India, Bengal.  
*fenestratus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 42 : *gen. dub.*  
 Hab. Burma.  
*pallens* (*Carabus*), Fabricius, Syst. Ent., 1775, p. 244 : Chaudoir, *Mon.*, p. 76 : Bates, Biol. Centr. Amer., Col., i (i), p. 198.  
*Boisduvalii*, Gory, Ann. Soc. Ent. Fr., 1833, p. 189.  
*Bonfilsii*, Dejean, Spec., i, p. 251 : Hope, Col. Man., ii, t. 1, f. 6 : Brullé, Hist. Nat. Ins. Col., i, p. 224, t. 7, f. 6 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 41.  
 Hab. N. and S. America, Europe, Africa, Asia, Java, Formosa, Oceania.

Genus **CROSSOGLOSSA.**

- Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 177.  
*latecincta*, Bates, Trans. Ent. S. Lond., 1873, p. 315.  
 Hab. Hongkong, Japan.  
*nigrolineata* (*Plochionus*), Chaudoir, Bull. Mosc., xxv (i), 1852, p. 44 : *Mon.*, p. 180.  
 Hab. Bengal.  
*testacea*, Chaudoir, *Mon.*, p. 178.  
 Hab. Dekhan.

Genus **BOTHYNOPTERA.**

- Schaum, Jl. Ent., ii (1863), 1866, p. 75 : Mun. Cat., p. 143 : Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 181.  
*dorsigera*, Schaum, *l.c. supra*, p. 76, t. 4, f. 3 : Chaudoir, *l.c. supra*, p. 181.  
 Hab. N. India.

Genus **ENDYNOMENA.**

- Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 186.  
 ? *Pradierii*, Fairmaire, Rev. Mag. Zool., 1849, p. 34 : Chaudoir, *l.c. supra*, p. 186.  
 Hab. Marquesas Islands, ? Pondicherry.

Genus **ANCHISTA.**

Nietner, Jl. As. Soc. Ben., xxvi 1856, p. 523 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 374 : Mun. Cat., p. 118 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 236.

*Paraphaea*, Bates, Trans. Ent. S. Lond., 1873, p. 312.

*binotata* (*Plochionus*), Dejean, Spec., i, 1825, p. 252 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 111.

*discophora*, (*Callida*), Chaudoir, Bull. Mosc., xxv (1), 1852, p. 48.

*signifera* (*Paraphaea*), Bates, Trans. Ent. S. Lond., 1873, p. 312.

Hab. N. India, Andamans, Mariannes, Japan.

*eurydesa*, Chaudoir, Bull. Mosc., lii (2), 1877, p. 236.

Hab. India.

*glabra*, Chaudoir, *l.c.*, p. 237.

Hab. India, Pondicherry.

*modesta*, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 523 : Ann. Mag. N. H., (2s.) xix, 1857, p. 375 : Chaudoir, *l.c. supra*, p. 239.

Hab. Ceylon, Colombo.

*picea*, Chaudoir, Bull. Mosc., lii (2), 1877, p. 238.

Hab. Dekhan.

*subpubescens*, Chaudoir, *l.c.*, p. 238.

Hab. N. India.

Genus **CYMINDIS.**

Latreille, Gen. Crust., i, 1806, p. 190 : Lacord., Gen. Col., i, p. 108 : Mun. Cat., p. 118 : Schmidt Goebel, Faun. Col. Birm., p. 31 : *Monograph*, Chaudoir, Berlin. Ent. Zeits., xvii, 1873, p. 53.

*Anomoerus*, Fischer, Ent. Imp. Russ., i, 1821, p. 125.

*Arrhostus*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 240, *tab.*

*Berus*, Motsch., *l.c.*, p. 240.

*Cymindoidea*, Lap. de Casteln., Ann. Soc. Ent. Fr., i, 1832, p. 390 : Chaud., Bull. Mosc., xxix (3), 1875, p. 9.

*Malisus*, Motsch. *l.c. supra*, p. 240.

*Mastus*, Motsch., *l.c. supra*, p. 240.

*Menas*, Motsch., *l.c.*, p. 240.

*Philoteenus*, Mannerheim, Brachyél., ii, 1837, p. 42 : Mun. Cat., p. 123.

*Psammastus*, Motsch., *l.c. supra*, p. 240, 299, *tab. syn.*

*Tarsostinus*, Motsch., *l.c.* p. 240.

*Tarus*, Clairville, Ent. Helv., i, 1806, p. 94 : Motsch., *l.c. supra*, p. 240, 302.

\**attenuata*, Jakowleff, Hor. Soc. Ent. Ross., xxi, 1887, p. 150.

Hab. Pámir, Gilgit.

*distigma* (*Cymindoidea*), Chaudoir, Bull. Mosc. xlix (3), 1875, p. 15.

Hab. Bengal.

*glabella*, Bates, Proc. Zool. S. Lond., 1878, p. 719,

Hab. India, Ladák [*Ind. Mus.*, type].



*indica*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 31 : Chaudoir, Bull. Mosc., xlix (3), 1875, p. 16.

*Guérinii*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 49.

Hab. Burma, N. India, Nilgiris.

\* *Mannerheimi* Gebler, Bull. Ac. St. Petersb., i, 1842, p. 36 : Bull. Mosc., 1859, p. 317. Hab. Siberia [*Ind. Mus.*, Yarkand Mission, Bates].

*nigra*, (*Cymindoides*), Chaudoir, Bull. Mosc., xlix (3), 1875, p. 19.

Hab. Coromandel.

*quadrimaculata*, Redtenbacher, Hügel Kaschm., iv (2), 1844, p. 499, t. 23, f. 3.

Hab. India.

? *stigmula* (*Cymindis*), Chaudoir, Bull. Mosc., xxv (i), 1852, p. 57 : *ib.*, xlix (3), 1875, p. 61.

Hab. N. India, Simla.

### Genus **TARIDIUS.**

Chaudoir, Bull. Mosc., xlix (3), 1875, p. 7.

*opaculus*, Chaudoir, *l.c.*, p. 8.

Hab. N. India.

### Genus **PLATYTARUS.**

Fairmaire, Bull. Soc. Ent. Fr., (2s.) viii, 1850, p. xvii : Mun. Cat., p. 123.

*Boysii* (*Cymindis*), Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 50.

Hab. N. India, Simla.

### Genus **CELAENEPHES.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 77 : Lacord., Gen. Col., i, p. 133 : Mun. Cat., p. 148.

*parallelus*, Schmidt Goebel, *l.c.*, *supra*, p. 78, t. 2, f. 5.

*linearis* (*Leistus*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 203.

Hab. Burma, Ceylon, Malacca, Perak, Siam, Sumatra, New Caledonia.

### Genus **PENTAGONICA.**

Schmidt Goebel, Faun. Col. Birm., 1846, p. 48 : Lacord., Gen. Col., i, p. 133 : Schaum, Berlin. Ent. Zeits., vii, 1863, p. 74 : Chaudoir, Bull. Mosc., lii (2), 1877, p. 212 : Bates, Trans. Ent. S. Lond., 1873, p. 321.

*Didetus*, Leconte, Trans. Amer. Phil. Soc., 1853, p. 377.

*Elliotia*, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 524 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 375.

*Rhombodera*, Reiche, Rev. Zool., 1842, p. 313 : Lacord., Gen. Col., i, p. 139 : Mun. Cat., p. 148 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 74 (*nom. praeoc.*).

*Trichothorax*, Montrouzier, Ann. Soc. Ent. Fr., 1860, p. 235.

*Wakefieldia*, Broun, Man. New Zep. Col., 1880, p. 62.

*Xenothorax*, Wollaston, Col. Hesper., 1867, p. 15.



*Erichsonii*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 48.

Hab. Burma.

*marginata*, Motsch., Bull. Mosc., xxxiv (i), 1861, p. 105, t. 9, f. 3.

Hab. Ceylon.

*pallipes* (*Elliotia*), Nietner, Jl. As. Soc. Ben., 1856, p. 525 ; Ann. Mag. N. H., (2s.) xix, 1857, p. 376.

? = *Erichsonii*, Schmidt Goebel, *g.v.*

Hab. Ceylon.

*ruficollis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 48.

Hab. Burma, N. India.

*suturalis* (*Rhombodera*), Schaum, Berlin. Ent. Zeits., vii, 1863, p. 75.

Hab. Hongkong.

*transparipes*, Motschulsky, Et. Ent., 1859, p. 29.

Hab. Ceylon, Kandy (*Bates*).

HELLUONINI:—Lacordaire, Gen. Col., i, p. 90 : Horn, Gen. Carab., p. 160 : Leconte & Horn, Class. Col., p. 45.

### Genus **CREAGRIS.**

Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 139 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 277 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 262 : Gestro, Ann. Mus. Civ. Gen., vii, p. 868.

*Pseudohelluo*, Lap. de Casteln., Nat. Austr. Col., 1867, p. 18.

*affinis*, R. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 870, fig.

Hab. Siam, Bangkok.

*labrosus*, Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 139 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 278 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 213 : R. Gestro, *l.c. supra*, p. 872, fig.

*piceus*, Schaum, Berlin. Ent. Zeits., 1863, p. 80 : *id.*, *l.c.*, 1864, p. 116, t. 2, f. 6.

Hab. Ceylon, Colombo (*Bates*).

### Genus **MACROCHILUS.**

Hope, Col. Man., ii, 1838, p. 116 : Schmidt Goebel, Faun. Col. Birm., p. 64 : Lacord., Gen. Col., i, p. 93 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 80 : Chaudoir, Bull. Mosc., lri (2), 1877, p. 247.

*Acanthogenius*, Reiche, Ann. Soc. Ent. Fr., xi, 1842, p. 3 : Lacord., Gen. Col., i, p. 93.

*Macrocheilus*, (Kirby), Hope, *l.c. supra*.

*Meladroma*, Motsch., Et. Ent., 1855, p. 54 : Chaud., Rev. Mag. Zool., (2s.) xxiii, 1872, p. 171.

- anthioides*, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 169.  
Hab. Bengal.
- asteriscus*, White, Ann. Mag. N. H., xiv, 1844, p. 422 : Chaudoir, Rev. Mag. Zool., 1872, p. 172.  
*crucifer*, Redtenbacher, Reise Novara, Zool. ii, Col., 1867, p. 4, t. 2, f. 3.  
Hab. China, Hongkong [*Ind. Mus.*, Hongkong].
- Bensonii*, Hope, Col. Man., ii, 1838, p. 166, t. 1, f. 5 : Chaudoir, Rev. Mag. *l.c. supra*, p. 212.  
*quadrimaculatus*, Guérin, Rev. Zool., 1840, p. 38 : Rev. Mag. Zool., Ins. t. 47.  
Hab. N. India, Madras, Ceylon, [*Ind. Mus.*, Madras, Giridhi, Sibságar, Darjiling, Burki].
- distactus*, Wiedemann, Zool. Mag., ii (i), 1823, p. 49.  
Hab. Java.
- dorsalis*, Klug, Jahrb. Insect., 1834, p. 77.  
Hab. India.
- impictus*, Wiedemann, Zool. Mag., ii (i), 123, p. 49.  
Hab. Java.
- scapularis*, Reiche, Ann. Soc. Ent. Fr., xi, 1842, p. 343.  
Hab. India.
- trimaculatus*, Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 171.  
Hab. Dekhan.
- tripustulatus*, Fabr., Ent. Syst., i, 1792, p. 145 : Dejean, Spec., i, p. 286 : Guérin, Voy. Delessert, ii, p. 34 : Schmidt Goebel, Faun. Col. Birm., p. 65, pt. : (*Helluo*) Lap. de Casteln., Hist. Nat. Ins., i, p. 47 : Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 212.  
Hab. Java, Burma [*Ind. Mus.*, Rangoon].

Genus **PLANETES.**

- MacLeay, Annul. Javan., 1825, p. 28 : Lacord., Gen. Col., i, p. 94 : Mun. Cat., p. 95.  
*Heteroglossa*, Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 141 ; Ann. Mag. N. H., (2s.) xx, 1857, p. 279.
- bimaculatus*, MacLeay, *l.c. supra*, p. 29, t. 1, f. 8 : Chaudoir, Rev. Mag. Zool., 1872, p. 139 : Bates, Trans. Ent. S. Lond., 1873, p. 304.  
Hab. Java, China, Japan.
- elegans*, Nietner, Journ. As. Soc. Beng., xxvi, 1857, p. 143 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 281.  
Hab. Ceylon.
- immaculatus*, Schaum, Berlin. Ent. Zeits., 1863, p. 81.  
Hab. Malacca.

- rufoceph.** Schaum, *l.c.*, p. 81 : Chaudoir, Rev. Mag. Zool., 1872, p. 139.  
*bimaculatus*, Nietner (*neo* MacLeay), Jl. As. Soc. Ben., xxvi, 1857, p. 144 ;  
 Ann. Mag. N. H., (2s.) xx, p. 282.  
 Hab. Ceylon.
- ruficollis.** Nietner, Jl. As. Soc. Ben. *l.c. supra*, p. 144 ; Ann. Mag., *l.c. supra*, p. 282.  
 Hab. Ceylon.
- secernendus.** Oberthür, Notes Leyden Mus., v, 1883, p. 217.  
 Hab. E. Sumatra, Serdang.
- simplex.** Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 199.  
 Hab. Ceylon, Peradeniya.

Genus **OMPHRA.**

- Reiche, Ann. Soc. Ent. Fr., 1842, p. 330 : Lacord., Gen. Col., i, p. 94 : Mun. Cat., p. 100.
- atrata.** Klug, Jahrb. Insect., 1834, p. 72.  
 Hab. India.
- complanata.** Reiche, Ann. Soc. Ent. Fr., 1842, p. 342 : Chaudoir, Rev. Mag. Zool. (2s.) xxiii, 1872, p. 141.  
*brevis*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 36.  
 Hab. India, Simla.
- hirta.** Fabr. Syst. Eleuth., i, 1801, p. 214 : Dejean, Spec., i, p. 284 ; Ic., ii, t. 7, f. 1 : (*Helluo*) Lap. de Casteln., Hist. Nat. An. Art., i, p. 47.  
 Hab. India [ *Ind. Mus.*, Bengal, Giridhi, Vizagapatam. S. India ].
- pilosa.** Klug, Jahrb., i, 1834, p. 71.  
*attelaboides*, Fabr., Syst. Eleuth., i, 1801, p. 24 : Erichs., Stettin Ent. Zeit., 1847, p. 141.  
 Hab. India, Ceylon.
- rotundicollis.** Chaudoir, Rev. Mag. Zool., (2s.) xxiii, 1872, p. 140.  
 Hab. India.
- rufipes.** Klug, Jahrb. Ins., i, 1834, p. 72 : Chaudoir, *l.c. supra*, p. 141 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 71.  
 Hab. India, Ceylon, Colombo.
- ANTHIINI.**—Lacordaire, Gen. Col., i, 1854, p. 175 : Horn, Gen. Carab., p. 162.

Genus **ANTHIA.**

- Weber, Obs. Ent., 1801, p. 17 : Bonelli, Mém. Acad. Turin, 1813, p. 451 : Lacord., Gen. Col., i, p. 177 : Mun. Cat., p. 168 ; Lequien, Mag. Zool., 1832, cl. ix, t. 38-41 : Gory, *ib.*, 1839, t. 14-16 : Guérin, Voy. Abyssin., Zool. Ins., p. 256 : Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 41 ; *ib.*, xxxiv (i), 1861, p. 561.  
*Gonogenia*, Chaudoir, Bull. Mosc., xvii, 1844.  
*Microlestia*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 45.  
*Pachymorpha*, Hope, Col. Man., ii, 1838, p. 51 : Motsch., Bull. Mosc., xxxvii (3), 1864, p. 215.  
*Thermophila* (Leach), Hope, *l.c. supra*, p. 52.

*elliptica*, (*Pachymorpha*), Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 216.

Hab. Tranquebar.

*indica*, Chaudoir, Bull. Mosc. xxxiv (i), 1861, p. 563.

Hab. India [*Ind. Mus.*, Vizagapatam, W. Bengal].

*orientalis*, Hope, Col. Man., ii, 1838, p. 163, t. 3, f. 4 : Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 563 ; Motsch., *l.c.* xxxvii (3), 1864, p. 216.

Hab. Bombay [*Ind. Mus.* N. India].

*sexguttata*, Fabr., Syst. Ent., 1775, p. 236 : Oliv., Ent., iii (35), p. 15, t. 1, f. 6 : Dejean, Spec., i, p. 341 : Brullé, Hist. Nat. Ins. Col., i, p. 270, t. 9, f. 2 : Lap. de Casteln., Hist. Nat. Ins., i, p. 60 : Chaudoir, Bull. Mosc., xxxiv (i), 1861, p. 562 : Motsch., *l.c.*, xxxvii (3), 1864, p. 216.

Hab. India, Pondicherry [*Ind. Mus.*, Berhampur].

**PHYSOCROTAPHINI**:-- Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 301 : Horn, Gen. Carab., p. 162.

### Genus **HELLUODES.**

Westwood, Trans. Ent. S. Lond., iv, 1847, p. 279 : Lacord., Gen. Col., i, p. 92 : Mun. Cat., p. 96 : Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 302.

*taprobanae*, Westwood, Trans. Ent. S. Lond., iv, 1847, p. 279, t. 21, f. B.

*ceylonicus*, Lacordaire, Gen. Col., Atlas, t. 7, f. 1, ( *nec Parry*).

Hab. Ceylon, Kitugalle (*Bates*).

Westwoodii, Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 203.

Hab. Dekhan.

### Genus **PHYSOCROTAPHUS.**

Parry, Trans. Ent. S. Lond., v, 1849, p. 180 : Lacord., Gen. Col., i, p. 181 : Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 303 : Mun. Cat., p. 96.

*ceylonicus*, Parry, Trans. Ent. S. Lond., v, 1849, p. 180, t. 18, f. 4.

Hab. Ceylon, Dikoya (*Bates*).

### Genus **POGONOGLOSSUS.**

Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 304 : Gestro, Ann. Mus. Civ. Gen., vii, p. 862.

*Chaudoirii*, R. Gestro, Ann. Mus. Civ. Gen., vii, 1875, p. 863.

Hab. Cambodia.

*sumatrensis*, R. Gestro, *l.c.*, p. 863.

Hab. Sumatra.

*validicornis*, Chaudoir, Bull. Mosc., xxxv (4), 1862, p. 304 : R. Gestro, *l.c. supra*, p. 862.

Hab. Java.

*Cratocerini*:—Horn, Gen. Carab., p. 163.

### Genus **BRACHIDIUS.**

Chaudoir, Bull. Mosc., xxvi (i), 1852, p. 78; *id.*, *Monograph*, Ann. Soc. Ent. Belg., xv, 1872, p. 18: Lacord., Gen. Col., i, p. 264: Mun. Cat., p. 250.

*corpulentus*, Chaudoir, Ann. Soc. Ent. Belg., xv, 1872, p. 20.

Hab. Penang.

*crassicornis*, Chaudoir, Bull. Mosc., xxvi (i), 1852, p. 78; *id.*, *Mon.*, p. 19.

Hab. Timor, Moluccas, Philippines.

*Orthogonini*, Chaudoir, *Essai Mon.*, Ann. Soc. Ent. Belg., xiv, 1871, p. 95: Horn, Gen. Carab., p. 164.

### Genus **ORTHOGONIUS.**

Dejean, Spec., i, 1825, p. 279: Lacordaire, Gen. Col. i, p. 269: Schmidt Goebel, Faun. Col. Birm., p. 55: Mun. Cat., p. 251: Chaudoir, Bull. Mosc., xxi (i), 1848, p. 98; *id.*, *Monograph*, Ann. Soc. Ent. Belg., xiv, 1871, p. 95.

*Maraga*, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204: Waterhouse, Ent. Mon. Mag., x, 1873, p. 17: Chaudoir, *Mon.*, p. 121.

Subg. *Apsectra*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 61.

Subg. *Haploisthius*, Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 434.

*acronus*, Wiedemann, Zool. Mag., i (3), 1819, p. 167: Dejean, Spec., v, p. 398: Lacordaire, Gen. Col., Atlas, t. 10, f. 7: Lap. de Casteln., Hist. Nat., An. Art., i, p. 46: Chaud., *Mon.*, p. 104.

*brunnilabris*, MacLeay, Annul. Javan., 1825, p. 27.

Hab. Java.

*acutangulus*, Chaudoir, Bull. Mosc., liii (2), 1878, p. 5.

Hab. Ceylon.

*alternans* (*Plochionus*), Wiedemann, Zool. Mag., ii (i), 1823, p. 52: Brullé, Hist. Nat. Ins., i, p. 225, t. 8, f. 1: Chaudoir, *Mon.*, p. 102: Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 110.

Hab. Java.

*angulatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 58: Chaudoir, *Mon.*, p. 110.

Hab. Burma, Tenasserim.

*angusticollis*, Schmidt Goebel, *l.c.*, p. 61: Chaudoir, *Mon.*, p. 122.

Hab. Burma.

? *angustus*, Chaudoir, *Mon.*, p. 114.

Hab.? Lake Ngami, ? Malaya.

*Bacoti*, Chaudoir, *Mon.*, p. 109.

Hab. Bengal.

*crassicornis*, Chaudoir, *Mon.*, p. 105.

Hab. Java.

*crenaticrus*, Chaudoir, *Mon.*, p. 113.

Hab. Cambodia.



- Davidii**, Chaudoir, Bull. Mosc., liii (2), 1878, p. 3.  
Hab. Middle China.
- deletus**, Schmidt Goebel, Faun. Col. Birm., 1846, p. 56 : Chaud., *Mon.*, p. 113.  
Hab. Burma.
- duplicatus** (*Carabus*), Wiedemann, Zool. Mag., i (3), 1819, p. 166 : Schmidt Goebel, Faun. Col. Birm., p. 60 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 46 : Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 110.  
Hab. Burma, Thagata, Tenasserim, S. China.
- femoralis**, Chaudoir, Bull. Mosc., xxi (i), 1848, p. 99 ; *Mon.*, p. 111.  
Hab. India, Nilgiris.
- femoratus**, Dejean, Spec., i, 1825, p. 281 : Chaud., *Mon.*, p. 122.  
*picilabris*, MacLeay, Annul. Javan., 1825, p. 27.  
Hab. Java, Penang, Malacca.
- fugax**, Chaudoir, *Mon.*, p. 108.  
Hab. Ceylon.
- Hagenii**, Oberthür, Notes Leyden Mus., v, 1883, p. 222.  
Hab. E. Sumatra, Serdang.
- hirtus**, Chaudoir, *Mon.*, p. 103.  
Hab. Penang.
- Hopel**, Gray, Griffith Anim. Kingd., Ins., ii, 1832, p. 273, t. 13, f. 4 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 46 : Chaud., *Mon.*, p. 103.  
*Malabarensis*, Gory, Ann. Soc. Ent. Fr., 1833, p. 196.  
? *Doriae*, Putzeys, Ann. Soc. Ent. Belg., xiv, 1871, p. 104, note. Borneo.  
Hab. India, Malabar, Malacca [*Ind. Mus.*, Khasiya Hills, Sibsagar, Assam].
- hypocrita**, Chaudoir, *Mon.*, p. 102.  
Hab. Philippines, ? Java.
- intermedius**, Chaudoir, *Mon.*, p. 102.  
Hab. Java.
- insularis**, Chaudoir, *Mon.*, p. 106.  
Hab. Penang.
- longicornis**, Chaudoir, *Mon.*, p. 109.  
Hab. Siam.
- luzonicus**, Chaudoir, *Mon.*, p. 123.  
Hab. Philippines.
- melanarius**, Chaudoir, *Mon.*, p. 113.  
Hab. Penang.
- Mellyi** (*Haplophilthius*), Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 434 ; *Mon.*, p. 101.  
Hab. N. India, Bengal.
- Mniszechii**, Chaudoir, *Mon.*, p. 101.  
Hab. Malacca.
- Monhotii**, Chaudoir, *Mon.*, p. 107.  
Hab. Cochin China.

- opacus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 60.  
Hab. Burma.
- parallelus*, Chaudoir, *Mon.*, p. 109.  
Hab. Ceylon.
- parvus*, Chaudoir, *Mon.*, p. 112.  
Hab. Nilgiris.
- ? *philippensis* (*Amblygnathus*), Chevrolat, Rev. Zool., 1841, p. 221.  
Hab. Philippines.
- piceus*, Chaudoir, *Mon.*, p. 122.  
Hab. Malacca.
- picipennis*, Chaudoir, *Mon.*, p. 100.  
Hab. Cambodia.
- planiger* (*Maraga*), Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204 : Bates, *l.c.*,  
(5s.), xvii, 1886, p. 211 : Chaud., Ann. Soc. Ent. Belg., xiv, 1871, p. 121.  
Hab. Ceylon.
- plicatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 59 : Chaud., *Mon.*, p. 110.  
Hab. Burma, Tennasserim.
- politus*, Chaudoir, *Mon.*, p. 105.  
Hab. Malacca.
- profundestriatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 58 : Bates, Ann. Mus.  
Civ. Gen., (2s.) vii, 1889, p. 110.  
Hab. Burma, Teintso.
- puncticollis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 57 : Chaudoir, *Mon.*, p. 112.  
*duplicatus*, Dejean, Spec., i, 1825, p. 279 (*nec* Wied.) : ? MacLeay, Annul.  
Javan., p. 27.  
Hab. India, Burma, Tenasserim.
- punctulatus*, Chaudoir, *Mon.*, p. 110.  
Hab. India.
- schaumii*, Chaudoir, *Mon.*, p. 112.  
Hab. Ceylon.
- Schmidt Goebellii*, Chaudoir, *Mon.*, p. 99.  
*duplicata* (*Apsectra*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 61 : (*nec*  
Wied.).  
Hab. Burma.
- sulcatus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 59 : Chaudoir, *Mon.*, p. 110.  
Hab. Burma, Tenasserim.
- suturalis*, Chaudoir, *Mon.*, p. 104.  
Hab. Penang.
- xanthomerus*, Redtenbacher, Reise Novara, Zool, ii, Col., 1867, p. 12 : Chaud., *Mon.*,  
p. 124.  
Hab. Hongkong.

Genus **HFXACHAETUS.**

Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 124.

*laevissimus*, Chaudoir, Bull. Mosc., liii (2), 1878, p. 6.

Hab. Malacca.

*lateralis*, Guérin, Voy Delessert, ii, 1843, p. 35 : Chaud., Ann. Soc. Ent. Belg., xiv, 1871, p. 125.

Hab. Coromandel, Penang.

### Genus **ACTENONCUS.**

Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 126.

*ater*, Lap. de Casteln., Et. Ent., 1834, p. 48 : Chaudoir, Bull. Mosc., liii (2), 1878, p. 7.

*atratus*, Chaudoir, Ann. Soc. Ent. Belg., xiv, 1871, p. 126.

Hab. Java.

Sect. **HARPALINE UNISETOSÆ**:—Horn, Gen. Carab., p. 165.

**BRACHYNINI**:—Lacordaire, Gen. Col., i, p. 97 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 11 : Horn, Gen. Carab., p. 166 : Leconte & Horn, Class. Col., p. 47.

### Genus **PHEROPSOPHUS.**

Solier, Ann. Soc. Ent., Fr., 1833, p. 461 ; *id.*, 1834, t. 16, f. 6-7 : Lacord., Gen. Col., i, p. 99 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 16 : Mun. Cat., p. 102.

*agnatus*, Chaudoir, *Mon.*, p. 43.

Hab. Chusan, ? Hongkong.

*amoenus*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 70 : *Mon.*, p. 36.

Hab. India.

*annulus*, Fabr., Syst. Eleuth., i, 1801, p. 217 : Chaud., *Mon.*, p. 47.

Hab. India, Tranquebar.

*aptinoides*, Chaudoir, *Mon.*, p. 19.

Hab. India.

*assamensis*, Chaudoir, *Mon.*, p. 33.

Hab. Assam.

*assimilis*, Chaudoir, *Mon.*, p. 38.

Hab. North China, ? Yangtse Valley.

*bimaculatus*, Linn., Mantis, 1771, p. 532 : ? Fabr., Syst. Ent., i, p. 243 ; Oliv., Ent., iii 35, p. 65, t. 2, f. 16 *a-c* : Dejean, Spec., i, p. 299 : Lap. de Casteln., Hist. Nat. An. Art. Ins., i, p. 51 ; Chaudoir, *Mon.*, p. 34.

Hab. N. India, Ceylon, Kitugalle (*Bates*) [*Ind. Mus.*, Calcutta, Afghanistan].

*Catoirei* (*Brachinus*), Dejean, Spec. i, 1825, p. 301 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 51 : Chaudoir, *Mon.*, p. 24.

var. *vineifrons*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 80.

Hab. Bengal, Simla, Assam, Ceylon, Kandy (*Bates*).

*consularis* (*Brachinus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 75.

Hab. Burma.

- discicollis* (*Brachinus*), Dejean, Spec., i, 1825, p. 300 : Chaudoir, *Mon.*, p. 21.  
 var. *affinis* (*Brachinus*), Dejean, Spec., i, 1825, p. 301.  
 Hab. India, Dekhan.
- emarginatus*, Chaudoir, *Mon.*, p. 20.  
 ? = *Girionierii*, Eyd. & Soul., *g. v.*  
 Hab. Philippines.
- fumigatus* (*Brachinus*), Dejean, Spec., i, 1825, p. 307 : Chaudoir, *Mon.*, p. 40.  
 Hab. Philippines.
- fuscicollis* (*Brachinus*), Dejean, Spec., i, 1825, p. 306 : Chaudoir, *Mon.*, p. 37.  
 var. *ambiguus*, Dejean, Spec., i, 1825, p. 304 : Chaudoir, *Mon.*, p. 37.  
 „ *interruptus*, Dejean, *l. c.* p. 306 : Schmidt Goebel, Faun. Col. Birm.,  
 p. 74 : Chaudoir, *Mon.*, p. 37.  
 „ *quadripustulatus*, Chaudoir, Bull. Mosc., xvi (3), 1843, p. 706 ; *Mon.*,  
 p. 37.  
 Hab. Borneo, Sumatra, Java, Ceylon, Kitngalle (*Bates*).
- Girionierii*, Eydoux & Souleyet, Rev. Zool., 1839, p. 264 : Desmarest, Voy. La Bonite,  
 i, 1841, p. 293, t. 2, f. 2 : Chaudoir, *Mon.*, p. 32.  
 Hab. Philippines, Mindanao, Luzon.
- hilaris*, Fabr. Ent. Syst. Suppl., 1798, p. 56 ; Chaudoir, *Mon.*, p. 25.  
 var. *sobrinus*, Dejean, Spec., ii, 1826, p. 462.  
 Hab. Dekhan, Coromandel, Burma.
- javanus* (*Brachinus*), Dejean, Spec., i, 1825, p. 305 : Chaudoir, *Mon.*, p. 42.  
*occipitalis* (*Aptinus*), MacLeay, Annul. Javan., 1825, p. 28.  
 var. *imbriatus* (Dejean), Chaudoir, *Mon.*, p. 42.  
 Hab. Java.
- Jessoensis*, Morawitz, Bull. Acad. St. Petersburg, v. 1862, p. 322 : Beitr. Käf. Faun.  
 Jesso, p. 22, t. 1, f. 9 : Chaudoir, *Mon.*, p. 35.  
 Hab. Manchuria, Japan, ? Hongkong.
- lissoderus*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 79 : *id.*, *Mon.*, p. 24.  
 Hab. Tibet.
- marginalis*, Dejean, Spec., i, 1825, p. 310 : Schmidt Goebel, Faun. Col. Birm., p. 74 :  
 Chaudoir, *Mon.*, p. 34.  
 Hab. India, Burma, Siam, Cochinchina, Cambodia [*Ind. Mus.*, Calcutta,  
 Sikkim, Sibsagar, Assam].
- marginicollis*, Motschulsky, Et. Ent., 1853, p. 44 : Chaudoir, *Mon.*, p. 43.  
 Hab. N. China, ? Shanghai.
- melancholicus* (*Brachinus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 71 : Chau-  
 doir, *Mon.*, p. 20.  
 Hab. India, Bengal.
- nebulosus*, Chaudoir, *Mon.*, p. 27.  
 Hab. Cochinchina.
- picicollis*, Chaudoir, *Mon.*, p. 44.  
 Hab. Burma, Rangoon.
- siamensis*, Chaudoir, *Mon.*, p. 29.  
 Hab. Siam.

*stenoderus*, Chaudoir, Bull. Mosc. xxiii (i), 1850, p. 77; *Mon.*, p. 41.

=? *consularis*, Schmidt Goebel, *g. v.*

Hab. N. India, Bengal, Dekhan, Java.

*subcordatus*, Chaudoir, *Mon.*, p. 38.

Hab. —?

### Genus **BRACHYNUS.**

Weber, Obs. Ent., 1801, p. 22 : Lacord., Gen. Col., i, p. 99 : Motsch., Bull. Mosc. xxxvii (3), 1864, p. 214, *tab. syn.*: Mun. Cat., p. 103 : Chaudoir, *Monograph*, Ann.

Soc. Ent. Belg., xix, 1876, p. 49.

*Aploa*, Hope, Trans. Zool. S. Lond., 1833, p. 91.

*atripennis*, Chaudoir, *Mon.*, p. 71.

Hab. India, Simla.

*bigutticeps*, Chaudoir, *Mon.*, p. 52.

Hab. ? India, ? Sunda Islands.

*caligatus*, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 109.

Hab. Burma, Bhamo.

*chinensis*, Chaudoir, Bull. Mosc., xxiii (i), 1850, p. 81; *Mon.*, p. 68.

*Confucius*, Bohem., Freg. Eug. Resa, Col., 1858, p. 3.

Hab. Hongkong.

*cinctellus*, Chaudoir, *Mon.*, p. 55.

Hab. India, Dekhan.

*flaviventris*, Chaudoir, *Mon.*, p. 68.

Hab. India, Coromandel.

*flaviventris*, Oberthür, Notes Leyden Mus., v, 1883, p. 217.

Hab. E. Sumatra, Serdang.

*hexagrammus*, Chaudoir, *Mon.*, p. 55.

Hab. Bengal.

*illotus*, Chaudoir, *Mon.*, p. 58.

Hab. Dekhan.

*imbellus*, Chaudoir, *Mon.*, p. 70.

Hab. Dekhan.

*imbicollis*, Chaudoir, *Mon.*, p. 67.

Hab. Dekhan.

*longipalpis*, Wiedemann, Germar, Mag. Ent., iv, 1821, p. 118 : Dejean, Spec. i, p.

314 : Chaudoir, *Mon.*, p. 87.

Hab. Bengal.

*luzonicus*, Chaudoir, *Mon.*, p. 68.

Hab. Philippines.

*modestus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 73 : Chaudoir, *Mon.*, p. 69.

Hab. Calcutta, Maulmain.

*niceus*, Chaudoir, *Mon.*, p. 53.

Hab. Philippines.



- pictus* (*Aploa*), Hope, Trans. Zool. S. Lond. i, 1833, p. 92 : Brullé, Hist. Nat. Ins., Col., i, 1834, p. 223 : Lap. de Casteln., Hist. Nat. An. Art. Ins., i, p. 53 : Chaudoir, *Mon.*, p. 54.  
*figuratus*, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 41.  
 Hab. N. India, Bengal.
- puncticollis*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 72 : Chaudoir, *Mon.*, p. 69.  
 Hab. Burma.
- scitulus*, Schmidt Goebel, *l. c.* p. 72 : ? Chaudoir, *Mon.*, p. 69.  
 Hab. Burma, ? Tranquebar.
- scotomedes*, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 5 : Chaudoir, *Mon.*, p. 53.  
 Hab. Hongkong, Shanghai.
- scutellatus*, Chaudoir, *Mon.*, p. 69.  
 Hab. Dekhan.
- sexmaculatus*, Dejean, Spec., i, 1825, p. 312 : Lap. de Casteln., Hist. Nat. An. Art., i, p. 51 : Chaudoir, *Mon.*, p. 63.  
 Hab. N. to S. India.
- suturellus*, Chaudoir, *Mon.*, p. 69.  
 Hab. N. India.
- tetracolon*, Chaudoir, *Mon.*, p. 61.  
 Hab. Dekhan.
- tetragrammus*, Chaudoir, *Mon.*, p. 54.  
 Hab. Bengal.
- vigilans*, Chaudoir, *Mon.*, p. 68.  
 Hab. N. India.
- vitticollis*, Chaudoir, *Mon.*, p. 56.  
 Hab. Burma, Rangoon.

### Genus **STYPHLOMERUS.**

- Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 87.  
*Styphlomerus*, Chaudoir, *l. c.*, p. 88.
- dichrous*, Gemm. & Har., Mun. Cat., 1868, p. 105 : Chaudoir, *Mon.*, p. 92.  
*bicolor*, Bohem., Freg. Eug. Resa, Col., 1853, p. 3 (*nec* Brullé) : *nec* Bates, Trans. Ent. S. Lond., 1873, p. 307.  
 Hab. Hongkong.
- fusciceps* (*Brachinus*), Schmidt Goebel, Faun. Col. Birm., 1846, p. 73 : Chaudoir, *Mon.*, p. 92.  
 Hab. Burma.
- ruficeps*, Chaudoir, *Mon.*, p. 91.  
 Hab. India, Coromandel.

### Genus **CREPIDOGASTER.**

- Boheman, Ins. Caffr., i, 1848, p. 63 : Mun. Cat., p. 109 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 92.  
*Aptinus*, pt. Dejean, Spec., i, 1825, p. 290.

*Orepidostoma*, Motsch., Et. Ent., 1862, p. 54.

*humeralis*, Chaudoir, *Mon.*, p. 96.

Hab. India, Malabar.

### Genus **MASTAX**.

Fischer, Ent. Imp. Ross., iii, 1825, p. 111 ; Schmidt Goebel, Faun. Col. Birm., p. 68 : Lacord., Gen. Col., i, p. 101 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 82 : Mun. Cat., p. 108 : Chaudoir, *Monograph*, Ann. Soc. Ent. Belg., xix, 1876, p. 97.

*Brachinus*, Fabricius, Dejean, Steven.

*elegantulus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 69, t. 2, f. 1 : Chaudoir, *Mon.*, p. 99.

Hab. Burma.

*histrio*, Fabricius, Syst. Eleuth., i, 1801, p. 219 : Chaudoir, *Mon.*, p. 101.

Hab. India, Dekhan.

*moestus*, Schmidt Goebel, Faun. Col. Birm., 1846, p. 70, t. 2, f. 3 : Chaudoir, *Mon.*, p. 100.

Hab. Burma.

*ornatus*, Schmidt Goebel, *l. c.*, p. 70 : Chaudoir, *Mon.*, p. 100.

Hab. Burma.

*pocillus*, Schaum, Berlin. Ent. Zeits., vii, 1863, p. 82 : Chaudoir, *Mon.*, p. 101.

Hab. China, Hongkong, Singapur.

*pulchellus*, Dejean, Spec., v, 1831, p. 433 : Chaudoir, *Mon.*, p. 99.

Hab. India.

*striaticeps*, Chaudoir, *Mon.*, p. 99.

Hab. Dekhan.

**APOTOMINI**—Jacq. Duval, Gen., i, p. 43 ; Horn, Gen. Carab., p. 167.

### Genus **APOTOMUS**.

Illiger, Mag. Ins., vi, 1807, p. 348 : Lacord., Gen. Col., i, p. 172 : Mun. Cat., p. 166.

*atripennis*, Motschulsky, Et. Ent., 1858, p. 22.

Hab. Ceylon.

*fuscus*, Motschulsky, *l. c.*, p. 22.

Hab. India.

*xanthotelus*, Bates, Ent. Mon. Mag., xi, 1874, p. 95 ; Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 100.

Hab. India, Burma, Bhamo.

**BROSCINI**, (*Cnemacanthini*), Putzeys, Stettin. Ent. Zeits., xxix, 1868, p. 305 : Horn. Cat. Carab.

### Genus **BROSCUS**.

Panzer, Index Ent., 1813, p. 62 : Lacord., Gen. Col., i, p. 239 : Mun. Cat., p. 243 :

Putzeys, *Monograph*, Stettin. Ent. Zeit., 1863, p. 307.

*Cephalotes*, Bonelli, Mém. Acad. Turin, 1810 (*nom præoc.*).

*Pseudocypis*, Voet, Cat. Col., 1770, *teste*, Gozis, Recherche, 1886, p. 6.

- anomalus*, Chaudoir, Bull. Mosc., liii (2), 1878, p. 1.  
Hab. N. W. Himálaya.
- nepalensis* (*Percus*), Hope, Gray's Zool. Misc., 1831, p. 21.  
Hab. Nepál.
- nobilis* (*Caphalotes*), Dejean, Spec., iii, 1828, p. 432.  
*rufipes*, Guérin, Ic. Reg. An., t. 6, f. 5 : Gray, Griffith, An. Kingd., Ins., i, 1832, t. 25, f. 3.  
Hab. ? India, Syria.
- punctatus* (*Caphalotes*), Dejean, Spec., iii, 1828, p. 431 : Chaudoir, Bull. Mosc., liii (2), 1878, p. 2.  
*limbatus*, Ball., Bull. Mosc., xliii (2), 1870, p. 327.  
Hab. Egypt, Syria, Arabia, Nepál.

### Genus **CRASPEDONOTUS.**

- Schaum, Berlin. Ent. Zeits., vii, 1863, p. 87 : Mun. Cat., p. 245 : Putzeys, Stettin. Ent. Zeit., 1868, p. 314.
- tibialis*, Schaum, *l.c. supra*, p. 87, t. 1, f. 5 : Putzeys, *l.c. supra*, p. 314 : Bates, Trans., Ent. S. Lond., 1873, p. 243.  
Hab. Japan, China, Fuchau.

### Genus **BROSCOSOMA.**

- Putzeys, Car. Gen. Nov., 1846 ; *id.*, Stettin. Ent. Zeit., xxix, 1868, p. 353 : Lacord., Gen. Col., i, p. 242 : Mun. Cat., p. 244.
- Ribbeti, Putzeys, Stettin. Ent. Zeit., xxxviii, 1877, p. 100.  
Hab. Darjiling.

- CHLAENINI** :—Lacordaire, Gen. Col., i, 1854, p. 215 : Horn, Trans. Amer. Ent. S., x, p. vii : Gen. Carab., p. 171 : Leconte & Horn, Class. Col., p. 50.

### Genus **CHLAENIUS.**

- Bonelli, Obs. Ent., 1809, tab. syn. : Lacord., Gen. Col., i, p. 224 : Mun. Cat., p. 214 : Chaudoir, Bull. Mosc., xxix (3), 1856, p. 187 ; *id.*, *Monograph*, Ann. Mus. Civ. Gen., viii, 1876 : Laferté Sénectère, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 209. [Laferte's numerous undescribed species are omitted].
- Acacus*, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 254 : Lacord., Gen. Col., i, p. 222.
- Aleptocerus*, Laferté, *l.c. supra*, p. 236 : Lacord., Gen. Col., i, p. 218.
- Amblygenius*, Laferté, *l.c.*, p. 263 : Mun. Cat., p. 213.
- Barymorphus*, Laferté, *l.c.*, p. 235.
- Callistoides*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 334.
- Chlaenites*, Motsch., Bull. Acad. St. Petersb., ii, 1860, p. 411.
- Diaphorepsophus*, Chaud., Bull. Mosc., xxiii (2), 1850, p. 407 : Lacord., Gen. Col., i, p. 221.
- Dilobochilus*, Laferté, *l.c. supra*, p. 293 : Lacord., Gen. Col., i, p. 222.
- Dinodes*, Bonelli, Obs. Ent., i, 1809, tab. syn. : Laferté, *l.c. supra*, p. 264.

- Epomis*, Bonelli, *l.c. supra* : Laferté, *l.c. supra*, p. 252 : Lacord., Gen. Col., i, p. 223 : Chaud., *Mon.*, p. 120.
- Eurydactylus*, Laferté, *l.c. supra*, p. 255.
- Glyptoderus*, Laferté, *l.c.*, p. 260 : Chaud., *Mon.*, p. 75.
- Homalolachnus* Laferté, *l.c.*, p. 293 : Lacord., Gen. Col., i, p. 220 : Chaud., *Mon.* p. 26.
- Lissauchenius*, MacLeay, Annul. Javan., 1825; p. 13 : Lacord., Gen. Col., i, p. 217 : Chaud., *Mon.*, p. 34.
- Ocybatus*, Laferté, *l.c. supra*, p. 293 : Lacord., Gen. Col., i, p. 219 : Chaud., *Mon.*, p. 37.
- Ocydromus*, Laferté, *l.c.* p. 230.
- Omalotrichus*, Laferté, *l.c.* p. 233.
- Poecilostus*, Motsch., Bull. Mosc., xxxvii (4), 1864, p. 347.
- Rhysostrachelus*, Bohem., Ins. Caffr., i, , p. 133 : Lacord., Gen. Col., i, p. 220 : Chaud., *Mon.*, p. 29.
- Tomochilus*, Laferté, *l.c. supra*, p. 253.
- Trichochlaenius*, Seidlitz, Fauna Baltica, (ed. 2); 1887, p. 23.
- Vertagus*, Dejean, Spec. v, 1831, p. 608 : Lacord., Gen. Col., i, p. 219 : Chaud., *Mon.*, p. 31.
- aeroxanthus**, Chaudoir, *Mon.*, p. 112.  
Hab. Siam, Singapore, Java.
- agilis**, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 246 : *Mon.*, p. 193.  
Hab. N. India.
- amabilis**, Chaudoir, *Mon.*, p. 279.  
Hab. Siam.
- amplipennis**, Chaudoir, *Mon.*, p. 252.  
Hab. Java.
- apicalis** (*Carabus*), Wiedemann, Zool. Mag., i (3); 1819, p. 166 : Dejean, Spec. ii, p. 324 : Chaud. *Mon.*, p. 89.  
Hab. Bengal, Dekhan, Burma.
- atripes**, Chaudoir, *Mon.*, p. 160.  
Hab. India, Dekhan.
- bengalensis**, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 262 : *Mon.*, p. 157.  
*princeps*, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 147 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 371.  
*quadricolor* (*Poecilostus*), Motsch. (*nec* Oliv.), Bull. Mosc., xxxvii (3), 1864, p. 348.  
Hab. N. India, Bengal, Tranquebar, Ceylon, Siam, Tchekian (China).
- bicolor**, Chaudoir, *Mon.*, p. 130.  
Hab. Dekhan.
- biguttatus**, Motsch., Et. Ent., 1854, p. 63 ; *id.*, Bull. Mosc., xxxvii (3), 1864, p. 341 : Chaudoir, *Mon.*, p. 274.  
*subhamatus*, Bates, Trans. Ent. S. Lond., 1873, p. 248 (*nec* Chaud.).  
Hab. Japan, China, Yangtsé Valley, Hongkong.



- bimaculatus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 210; *id.*, *Mon.*, p. 62.  
*hamifer*, Bates, Trans. Ent. S. Lond., 1873.  
 Hab. N. India, Tranquebar, Borneo, Java, Hongkong.
- bimaculatus*, Dejean, Spec., ii, 1826, p. 301: Lacord., Gen. Col., i, p. 218, note:  
 Chaud., *Mon.*, p. 51.  
*? flaviguttatus*, MacLeay, Annul. Javan., 1823, p. 14: Chaud., *Mon.*, p. 52.  
 var. *celebensis*, Schaaf., Hor. Ent. Ross., xxi, 1887, p. 105.  
 Hab. India, Java, [*Ind. Mus.*, Bombay, N. Khasiya Hills, Andaman Islands].
- binotatus*, Dejean, Spec., ii, 1826, p. 302: Chaud., *Mon.*, p. 43.  
*maculifer*, Casteln., Not. Austr. Col., 1867, p. 62.  
*punctatus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 200.  
*puncticeps*, Gemm. & Har., Mun. Cat., 1869, p. 224.  
 var. *biguttatus*, Montrouzier, Ann. Soc. Ent. Fr. (4s.) i, 1860, p. 237.  
*guttatus*, Eschsch., Zool. Atlas, v, 1829, p. 26, t. 25, f. 8: Fairm., Rev. Zool., 1849, p. 232.  
 Hab. Java, Sumatra, Philippines, Australia, New Guinea, New Caledonia.
- bioculatus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 198: *Mon.*, p. 50.  
 Hab. India, Dekhan, Coromandel.
- birmanicus*, Chaudoir, *Mon.*, p. 93, 95.  
 Hab. Burma, Rangoon.
- braminus*, Chaudoir, *Mon.*, p. 139.  
 Hab. Coromandel.
- callichloris*, Bates, Trans. Ent. S. Lond., 1873, p. 250: Chaud., *Mon.*, p. 193.  
 Hab. Kiukiang on Yangtse, Japan.
- camillae*, R. Gestro, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 108.  
 Hab. Burma, Teintso.
- celer*, Chaudoir, *Mon.*, p. 201.  
 Hab. N. India, Dekhan.
- chalcoderus*, Chaudoir, *Mon.*, p. 139.  
 Hab. Siam, Bangkok.
- chalcothorax* (*Harpalus*), Wiedemann, Zool. Mag., ii (1), 1823, p. 51: Dejean, Spec., ii, p. 304: Chaud., *Mon.*, p. 138.  
*pubipennis*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 233.  
 Hab. India, Tranquebar.
- chlorodius*, Dejean, Spec., ii, 1826, p. 365: Chaud., *Mon.*, p. 176.  
 Hab. India, Cis Ganges [*Ind. Mus.*, Madras].
- cinctus* (*Carabus*), Fabr., Ins., i, p. 310: Herbst, Fûsl. Arch., iv, 1783, p. 135, t. 29 f. 7: Dejean, Spec., ii, p. 307: MacLeay, Annul. Javan., p. 13: Chaud., *Mon.*, p. 135: Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 74.  
*pulcher*, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 387; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 242.  
 Hab. Bengal, Dekhan, Ceylon, Colombo (Bates) [*Ind. Mus.* Sibságar, Assam, ? China].
- circumdatus*, Brullé, Silb. Rev. Ent., iii, 1835, p. 283: Chaud., *Mon.*, p. 114: Bates, Ann. Mag. N. H., (5s.) xvii, p. 74.



- cupricollis*, Nietner, Jour. As. Soc. Ben., xxv, 1856, p. 387 : Ann. Mag. N. H., (2s.) xix, 1857, p. 243.  
*limbatus*, Dejean, Spec., ii, 1826, p. 306.  
 Hab. India, Bengal, Kandy & Colombo (Bates), ? Java.
- contractus*, Chaudoir, *Mon.*, p. 202.  
 Hab. Dekhan.
- convexus*, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 310.  
 Hab. Yunnan.
- costiger*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 258 ; *Mon.*, p. 95 : Bates, Trans. Ent. S. Lond., 1873, p. 253.  
 Hab. Hongkong, Formosa, Yangtse Valley, Japan.
- crebrepunctatus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 204 ; *id.*, *Mon.*, p. 55.  
 Hab. N. India.
- culminatus*, Bates, Trans. Ent. S. Lond., 1873, p. 251.  
 Hab. ? Hongkong, Chekiang, Japan.
- cupreolineatus*, Chaudoir, *Mon.*, p. 158.  
 Hab. Siam, Bangkok.
- cyaneonitens*, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 310.  
 Hab. Yunnan.
- cyaniceps*, Bates, Trans. Ent. S. Lond., 1873, p. 325 : Chaudoir, *Mon.*, p. 278.  
 Hab. Hongkong.
- dilatatus* (*Poecilostus*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 348 : Chaudoir *Mon.*, p. 157.  
 Hab. India, Dekhan.
- distigma*, Chaudoir, *Mon.*, p. 49.  
 ? = *aspericollis*, Bates, Trans. Ent. S. Lond., 1873, p. 248.  
 Hab. Singapur.
- Doriae*, Chaudoir, *Mon.*, p. 137.  
 Hab. Siam, Bangkok.
- ducalis*, Chaudoir, *Mon.*, p. 155.  
 Hab. India, Dekhan, Rangoon.
- Duvaucelii* (*Epomis*), Dejean, Spec., v, 1831, p. 668 : Motsch., Bull. Mosc., xxxvii (3), p. 344 : Chaudoir, *Mon.*, p. 122.  
 Hab. India, Bengal.
- extremus*, Chaudoir, *Mon.*, p. 112.  
 ? = *postscriptus*, Bates, *q. v.*  
 Hab. Hongkong.
- femoratus*, Dejean, Spec., ii, 1826, p. 328 : Chaudoir, *Mon.*, p. 93, 94.  
*flavofemoratus*, Casteln., Et. Ent., p. 81, t. 1, f. 3 : Chaud., Bull. Mosc., xxix (3), 1856, p. 244.  
 Hab. Java.
- frater*, Chaudoir, *Mon.*, p. 261 : Bates Ann. Mag. N. H., (5s.) xvii, 1886, p. 74.  
 Hab. India, Malabar : ? Colombo (Bates).

- ? *fuscmarginatus*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 345.  
Hab. India.
- fugax*, Chaudoir, *Mon.*, p. 266.  
Hab. N. India.
- germanus*, Chaudoir, *Mon.*, p. 199.  
Hab. Laos.
- Gestroii*, Chaudoir, *Mon.*, p. 51.  
Hab. Malacca, Macao.
- guttula*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 216 : *Mon.*, p. 281.  
Hab. Hongkong.
- hamatus*, Eschsch., Zool. Atlas, v, 1831, p. 26 : Dej. Spec., v, p. 633 : Chaudoir, *Mon.*, p. 63.  
Hab. Philippines.
- impressicollis*, Chaudoir, *Mon.*, p. 236.  
Hab. N. India.
- inops*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 239 ; *id.*, *Mon.*, p. 262.  
*arcuaticollis*, Motsch., Et. Ent., 1860, p. 7.  
*vestitus*, Morawitz, *teste* Chaudoir, *Mon.*, *l.c.*  
Hab. Formosa, Yangtse Valley, Chusan, Japan, Korea, Manchuria.
- javanus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 229 : *Mon.*, p. 115.  
Hab. Malaya, Java.
- Lafertei*, Guérin, Voy. Deless., 1848, p. 86 : Chaudoir, *Mon.*, p. 86.  
*centromaculatus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 218.  
*diffinis*, Laferte, Ann. Soc. Ent. Fr., (2s.) ix, 1851 p. 241.  
*maculipennis*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 341.  
Hab. India, Bengal, Pondicherry.
- laetiusculus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 248 ; *Mon.*, p. 264.  
Hab. N. India, Ceylon. [*Ind. Mus.*, Kargil, Turkistan].
- laevipennis*, Chaudoir, *Mon.*, p. 196.  
Hab. Dekhan.
- leucops* (*Harpalus*), Wiedemann, Zool. Mag., ii (1), 1823, p. 52 : Chaudoir, *Mon.*, p. 71.  
*aeruginosus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 271.  
Hab. N. India, Colombo, Philippines, Cochinchina, Ceram.
- limbicollis*, Chaudoir, *Mon.*, p. 41.  
Hab. Dekhan, Formosa.
- luteicauda*, Chaudoir, *Mon.*, p. 201.  
Hab. Dekhan.
- luzonicus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 261 : *Mon.*, p. 159.  
Hab. Philippines (Luzon).
- lynx*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 199 : *Mon.*, p. 50.  
Hab. Hongkong.
- macropus*, Chaudoir, *Mon.*, p. 140.

- maculatus*, Dejean, Spec., ii, 1826, p. 300 : Chaud., *Mon.*, p. 99.  
Hab. Dekhan, Siam.
- marginifer*, Chaudoir, *Mon.*, p. 118.  
*marginatus*, Dejean, Spec., ii, 1826, p. 305 (*nec* Rossi).  
Hab. India.
- medioguttatus* (*Lissanuchenius*), Chaudoir, *Mon.*, p. 35.  
Hab. Dekhan, Burma.
- melanopterus*, Chaudoir, *Mon.*, p. 226.  
Hab. Siam, Ceylon (Peradeniya).
- micans* (*Carabus*), Fabr. Ent. Syst., i, 1792, p. 157; Syst. Eleuth., i, 1801, p. 151 :  
Chaudoir, Bull. Mosc., xxix (3), 1856, p. 201, 206; *id.*, *Mon.*, p. 62.  
*hamifer*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 209; *Mon.*, p. 62 : Bates,  
Trans. Ent. S. Lond., 1873, p. 247.  
Hab. India, Zanzibar, [*Ind. Mus.*, Calcutta].
- micans*, MacLeay, Annul. Javan., 1825, p. 14 (*nec* Fabr.) : Chaud., *Mon.*, p. 52.  
Hab. Java.
- Mouhotii*, Chaudoir, Col. Novit., i, 1883, p. 34.  
Hab. Laos.
- mutatus*, Gemm. & Har., Mun. Cat., p. 222 : Chaudoir, *Mon.*, p. 52.  
*apicalis*, MacLeay, Annul. Javan., 1825, p. 14 (*nec* Wied.).  
Hab. Java.
- naeviger*, Morawitz, Bull. Acad. St. Petersb., 1862, p. 324; *id.*, Beitr. Käferfaun.  
Ins. Jesso, p. 33, t. 1, f. 16 : Bates, Trans. Ent. S. Lond., 1873, p. 246 : Chaud.,  
*Mon.*, p. 273.  
Hab. Ningpo, Hangkow, Nagasaki.
- neelgheriensis*, Guérin, Rev. Zool., 1840, p. 38 : Chaudoir, Bull. Mosc., xxix (3), 1856,  
p. 206 : *id.*, *Mon.*, p. 54.  
*bilunatus*, Guérin, Voy. Deless., 1843, p. 36.  
*binotulatus*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 341.  
*formosus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 206.  
*maleolens*, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 148; Ann. Mag., (2s.)  
xx, 1857, p. 371.  
Hab. Bengal, Nilgiris, Tranquebar, ? Zanzibar.
- nepalensis*, Hope, Gray, Zool. Misc., 1831, p. 21.  
*concinus* (*Barymorphus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 236.  
*Mellyi* (*Diaphoropophus*), Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 407; *id.*,  
(2), 1856, p. 213; *id.*, (*Rhystrachelus*), *Mon.*, p. 30.  
*planicornis* (*Barymorphus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851,  
p. 236.  
*Swinhoei*, Bates, Proc. Zool. S. Lond., 1866, p. 342.  
Hab. India, Bengal, Malabar, Ceylon, Formosa [*Ind. Mus.*, China,  
Calcutta].
- nigricans*, Wiedemann, Germar, Mag. Ent., iv, 1821, p. 110, 6 : (*Epomis*) Dejean,  
Spec., ii, p. 371 : Chaudoir, *Mon.*, p. 126.  
*culminatus*, Bates, Trans. Ent. S. Lond., 1873, p. 251.

- rugicollis* (*Epomis*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 253, note 1.  
Hab. Hongkong, Chekiang, Formosa, Japan, ? Java.
- nigricoxis*, Motsch., Bull. Mosc., xxxvii (3), 1864, p. 339 : Chaud., *Mon.*, p. 94.  
Hab. Hongkong.
- nigripennis*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 250 ; *Mon.*, p. 225.  
Hab. N. India.
- nitidicollis*, Dejean, Spec., ii, 1826, p. 314 : Chaud., p. 117.  
Hab. Bengal [*Ind. Mus.*, Sikkim].
- opacipennis*, Chaudoir, *Mon.*, p. 176.  
Hab. Bengal.
- orbicollis* (*Ocydatus*), Chaudoir, *Mon.*, p. 40.  
Hab. Nilgiris.
- pachysomus*, Chaudoir, *Mon.*, p. 117.  
Hab. Siam.
- panagaeoides* (*Homalolachnus*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 235 :  
Chaudoir, *Mon.*, p. 28.  
Hab. India, Malabar.
- parallelus*, Dejean, Spec., v, 1831, p. 627 : Chaud., *Mon.*, p. 69.  
*Dohrnii*, Nietner, Journ. As. Soc. Beng., xxvi, 1857, p. 149 ; Ann. Mag. N.  
H., (2s.) xx, 1857, p. 372.  
Hab. Coromandel, Ceylon, Colombo.
- pericallus*, Redtenb., Reise Novara, Zool. ii, Col., 1867, t. 1, f. 4 : Chaud., *Mon.*, p.  
286. : Bates, Trans. Ent. S. Lond., 1873, p. 249.  
*pulcher*, Redtenb., *l.c.*, p. 10.  
Hab. Hongkong, Kiukiang on Yangtsekiang (Bates), Japan (Osaka).
- phaenoderus*, Chaudoir, *Mon.*, p. 161.  
? = *glabricollis*, Motschulsky, Bull. Mosc., xxxvii (3), 1864, p. 348.  
Hab. Dekhan.
- pictus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 208 ; *id.*, *Mon.*, p. 62 : Bates, Trans.  
Ent. S. Lond., 1873, p. 247.  
? = *Schönherrii*, Dejean, *q. v.*  
Hab. N. India to N. China.
- pleuroderus*, Chaudoir, Col. Novit., 1883, p. 30.  
Hab. India.
- posticalis*, Motschulsky, Et. Ent., 1853, p. 44 ; *id.*, Bull. Mosc., xxxvii (3), 1864, p.  
340 : Chaud., *Mon.*, p. 273.  
*hospes*, Morawitz, Beitr. z. Käfer Faun. Jesso. 1863, p. 32, t. 1, f. 15.  
*semipurpureus*, Motsch., Bull. Mosc., *l.c. supra*, p. 340.  
Hab. N. China, ? Canton.
- posticus* (*Carabus*), Fabr., Ent. Syst. Suppl., 1793, p. 57 ; *id.*, Syst. Eleuth., i, p.  
191 : Chaud., *Mon.*, p. 55.  
Hab. India.
- postscriptus*, Bates, Trans. Ent. S. Lond., 1873, p. 326 : Chaud., *Mon.*, p. 113, 156.  
Hab. Hongkong.

*pratensis*, Chaudoir, *Mon.*, p. 210.

Hab. Shanghai, ? Canton.

*pretiosus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 288 ; *id.*, *Mon.*, p. 178.

Hab. N. India.

*prostenus*, Bates, Trans. Ent. S. Lond., 1873, p. 325 ; 1883, p. 235 : Chaudoir, *Mon.* p. 259.

Hab. Kiukiang on Yangtse river, Japan.

*proximus*, Chaudoir, *Mon.*, p. 113.

Hab. Dekhan.

*pudivus*? (*Carabus*), Fabr., Syst. Eleuth., i, 1801, p. 193 : Chaud., *Mon.*, p. 280.

*malachinus* (*Callistoides*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 335.

Hab. Bengal.

*pugni*, Camerano, Atti R. Acad. Soc. Turin., xiv, 1878, p. 146 : Gestro, Ann. Mus. Civ. Gen., xviii, 1882, p. 306.

Hab. Burma, Mandalay.

*punctatostriatus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 244 : *id.*, *Mon.*, p. 91.

Hab. N. India.

*puncticollis*, Dejean, Spec., ii, 1826, p. 315 : Chaudoir, *Mon.*, p. 196.

Hab. Bengal, N. India.

*quadricolor* (*Carabus*), Olivier, Enc. Méth., v, 1790, p. 344 ; *id.*, Ent., iii, 35, p. 77, t. 10, t. 111 : Fabr., Syst. Eleuth., i, p. 180 : Dejean, Spec., ii, p. 317 : Schaum, Stettin Ent. Zeit., 1847, p. 44 ; Chaudoir, *Mon.*, p. 154.

*chlaenoides* (*Amblygenius*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 263, ♀.

*orientalis*, Dejean, Spec., ii, 1826, p. 339.

? *laevicollis* (*Poecilostus*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 348.

Hab. India, Tranquebar, Bengal, Java [*Ind. Mus.*, Sikkim].

*rudesculptus*, Chaudoir, *Mon.*, p. 136.

Hab. Siam.

*ruffemoratus* (*Lissauchenius*), MacLeay, Annul. Javan., 1825, p. 13, t. 1, f. 1 :

Chaud., Bull. Mosc., xxix (3), 1856, p. 198 : *Mon.*, p. 35.

Hab. Java, Bangkok, India.

*rufithorax*, Wiedemann, Germ., Mag. Ent., iv, 1821, p. 112 : Dejean, Spec. ii, p. 322 :

Chaudoir, *Mon.*, p. 259.

Hab. India.

*rugulosus*, Nietner, Journ. As. Soc. Beng., xxv, 1856, p. 388 ; Ann. Mag. N. H., (2s.)

xix, 1857, p. 243 : Bates, *id.*, (5s.) xvii, 1886, p. 74 : Chaud., *Mon.*, p. 90.

Hab. Ceylon, Negumbo (*Nietn.*) : Kandy, Peradeniya (*Bates*).

*scapularis*, Chaudoir, *Mon.*, p. 98.

Hab. Bengal.

*Schönherrii* (*Vertagus*), Dejean, Spec., v, 1831, p. 611 : Chaud., *Mon.*, p. 32.

? *pictus*, Chaudoir, *g. v.*

Hab. India, Africa.



- semperii*, Chaudoir, *Mon.*, p. 92.  
Hab. Philippines.
- sericimicans*, Chaudoir, *Mon.*, p. 235.  
Hab. China, Hongkong.
- sinensis*, Chaudoir, Bull. Mosc. xxix (3), 1856, p. 263 : *Mon.*, p. 162.  
Hab. Hongkong, Shanghai.
- sinuatus*, Dejean, Spec., ii, 1826, p. 321 : Chaudoir, *Mon.*, p. 194.  
Hab. India.
- sobrinus*, Dejean, Spec., ii, 1826, p. 316 : Chaudoir, *Mon.*, p. 197.  
Hab. India.
- spathulifer* (*Vertagus*), Bates, Trans. Ent. S. Lond., 1873, p. 324 ; Chaud., *Mon.*, p. 43.  
Hab. China.
- spoliatus* (*Carabus*), Rossi, Fauna Etrusc., i, 1790, p. 33 : Chaudoir, *Mon.*, p. 88.  
var. *indieriensis*, Motsch., l.c., p. 346 [*Ind. Mus.*, Kargil, 'Turkistan'].  
,, *nicannus* (*Chlaenites*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 346 : Bates, Trans. Ent. S. Lond., 1873, p. 249.  
Hab. Europe, N. Africa, Yangtse Valley, Japan.
- stenoristus*, Chaudoir, *Mon.*, p. 265.  
Hab. India, Malabar.
- ? *subhamatus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 211 : Bates, Trans. Ent. S. Lond., 1873, p. 248.  
Hab. Kiukiang on Yangtse, Japan.
- submarginatus*, Chaudoir, *Mon.*, p. 235.  
Hab. N. India, Rangoon.
- Sykesii*, Hope, Trans. Zool. S. Lond., 1833, p. 93, t. 13, f. 2.  
Hab. India, Puna.
- tetragonoderus*, Chaudoir, *Mon.*, p. 68.  
Hab. Sumatra, Macassar.
- trinotatus*, Chaudoir, *Mon.*, p. 179.  
Hab. N. India.
- varlicornis*, Morawitz, Käfer Jesso, 1863, p. 35, t. 1, f. 17 : Bates, Trans. Ent. S. Lond., 1873, p. 252 : Chaud., *Mon.*, p. 267.  
Hab. China, Japan.
- varipes*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 268 : *Mon.*, p. 87.  
Hab. N. India.
- velocipes*, Chaudoir, *Mon.*, p. 266.  
Hab. Bengal (Dacca), Siam, Ceylon (Dikoya), Nilgiris.
- virgulifer*, Chaudoir, *Mon.*, p. 61.  
? *pictus*, Bates, Trans. Ent. S. Lond., 1873, p. 247.  
Hab. Hongkong, N. China, ? Japan.
- viridanus*, Motsch., Bull. Mosc., xxxvii (3) 1864, p. 339 : Chaud., *Mon.*, p. 223.  
Hab. India.

*viduus*, Chaudoir, *Mon.*, p. 176.

Hab. N. India.

*vulneratus*, Dejean, Spec., v, 1831, p. 624 : Chaudoir, Bull. Mosc., xxix (3), 1856, p. 203 ; *id.*, *Mon.*, p. 52.

Hab. N. India, Bengal.

*xanthacrus*, Wiedemann, Zool. Mag., (ii) i, 1823, p. 51 : Dejean, Spec. ii, p. 323 : Chaud., *Mon.*, p. 8. (gen. dub. ? *Lachnophorus*).

*Hügelii*, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 9, t. 1, f. 3.

Hab. Bengal, Calcutta.

*xanthopleurus*, Chaudoir, Bull. Mosc., xxix (3), 1856, p. 230 ; *id.*, *Mon.*, p. 115.

Hab. Hongkong, Formosa, Chusan, N. China, Japan.

*xanthospilus* (*Carabus*), Wiedemann, Germar, Mag. Ent., iv, 1821, p. 115 : Chaud., *Mon.*, p. 285.

*quinquemaculatus*, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 386 ; *id.*, Ann. Mag. N. H., (2 s.) xix, 1857, p. 242.

Hab. Dekhan, Ceylon, Siam.

### Genus **PENTHIMUS.**

Mun. Cat., p. 229 : Chaudoir, Ann. Mus. Civ. Gen., viii, 1876, p. 291.

*Ceroglossus*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 192 (*nec* Solier).

*Harpglossus*, Motschulsky.

*opacus* (*Ceroglossus*), Chaudoir, Bull. Mosc., xxx (3), 1857, p. 6.

Hab. N. India.

### Genus **HOLOLIUS.**

Laferté Senect., Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 274 : Lacord., Gen. Col., i, p. 227 : Mun. Cat., p. 230 : Chaudoir, Bull. Mosc., xxx (3), 1857, p. 9 ; *id.*, Ann.

Mus. Civ. Gen., viii, 1876, p. 290 ; Col. Nov., 1883, p. 37.

*Hololeius*, Laferté Senect., *l.c. supra*.

*nitidulus* (*Chlaenius*) Dejean, Spec., ii, 1826, p. 341 : Laferté, *l.c. supra*.

*ceylanicus*, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 385 ; *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 241 ; Bates, *ib.*, (5s.) xvii, 1886, p. 75.

var. *punctulatus*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 10 ; *id.*, Ann. Mus. Civ. Gen., viii, p. 291.

Hab. India, Ceylon, Kandy, Hongkong.

### Genus **RHOPALISTES.**

Mun. Cat., p. 230 : Chaudoir, Ann. Mus. Civ. Gen., viii, 1876, p. 291.

*Rhopalopalpus*, Laferté Senect., Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 262 :

Chaudoir, Bull. Mosc., xxx (3), 1867, p. 11.

*janthinus* (*Chlaenius*), Redtenb., Hügel's Kaschm., iv (2), 1844, p. 500 : Chaudoir, Ann. Mus. Civ. Gen., viii, p. 292.

*poeciloides*, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 262 : (*Rhopalopalpus*) Chaudoir, Bull. Mosc., xxx (3), 1857, p. 11, ♀.

Hab. N. India, Kashmir.

Genus **PRISTOMACHAERUS.**

Bates, Trans. Ent. S. Lond., 1873, p. 323.

**chalccephalus** (*Panagaenus*), Wiedemann, Zool. Mag., ii (i), 1823, p. 57 : Schaum, Berlin Ent. Zeits., vii, 1863, p. 433 : Chaudoir, Ann. Soc. Ent. Belg., xxi, 1878, p. 84.

*chlorocephalus*, Kollar, Ann. Mus. Wien. i., 1836, p. 335, t. 31, f. 4-6.

Hab. N. India [*Ind. Mus.* ? Jhelam Valley].

**Messii**, Bates, Trans. Ent. S. Lond., 1873, p. 324.

Hab. Hongkong.

**quadricolor**, Putzeys, Stettin. Ent. Zeit., xxxviii, 1877, p. 101.

Hab. Darjiling.

**quadriguttatus**, Putzeys, *l.c.*, p. 101.

Hab. Darjiling.

Genus **CALLISTUS.**

Bonelli, Obs. Ent., 1809, tab. syn. : Lacord., Gen. Col., i, p. 374 : Mun. Cat., p. 213 : Chaudoir, Bull. Mosc., xxiii (2), 1850, p. 395 ; *ib.*, xlv (i), 1872, p. 384 : Schaum, Berlin. Ent. Zeits., vii, 1863, p. 85.

*Callistomimus*, Chaudoir, Bull. Mosc., xlv (i), 1872, p. 382.

**coarctatus**, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 230.

*littoralis*, Motschulsky, Et. Ent. 1859, p. 33.

*Westwoodii*, Schaum, Berlin Ent. Zeits., vii, 1863, p. 85.

Hab. N. India, Tranquebar, Ceylon.

**Dicksonii** (*Callistomimus*), Waterhouse, Ann. Mag. N. H., (5s.) xiv, 1884, p. 429.

Hab. Formosa.

**modestus**, Schaum, Berlin Ent. Zeits., vii, 1863, p. 85 : Chaudoir, Bull. Mosc., xlv (i), 1872, p. 382 : Bates, Trans. Ent. S. Lond., 1873, p. 246 : Fairm., Ann. Soc. Ent. Fr., (6s.) viii, 1888, p. 336.

Hab. Tonkin, China, Hongkong, Canton, Nagasaki.

**suturalis**, Fleutiaux, Ann. Soc. Ent. Fr., (6s.) vii, 1887, p. 61, t. 4, f. 2.

Hab. Annam, Hué.

Div. **OODINI** :—Chaudoir, Bull. Mosc., xxx (3), 1857, p. 13 ; *id.*, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 317, 485.

Genus **ANATRICHIS.**

Leconte, Trans. Ann. Phil. Soc., x, 1853, p. 391 : Chaudoir, Bull. Mosc., xxx (3), 1857, p. 21 ; *id.*, *Mon.*, *l.c. supra*, p. 318 : Bates, Biol. Centr. Amer., Col., i (i) p. 269.

*Oodinus*, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 352.

*Oodes*, pt, Dejean, Spec., v, p. 677.

**indicus**, Chaudoir, *Mon.*, p. 320.

Hab. Dekhan.

**pedinoides**, Chaudoir, *Mon.*, p. 321.

Hab. India.

Genus **SYSTOLOCRANIUS.**

Chaudoir, Bull. Mosc., xxx (3), 1857, p. 23 ; *id.*, *Monograph*, Ann. Soc. Ent. Fr., (6s) ii, 1882, p. 326 : Mun. Cat., p. 231.

*Chlaenius*, Boheman.

*Oodes*, Wiedemann, Eschscholtz, Dejean, Gory, Laferté.

*linea* (*Oodes*), Wiedemann, Germar Mag. Ent., iv, 1821, p. 113 ; Chaudoir, *Mon.*, p. 331.

*grandis* (*Oodes*), Dejean, Spec., ii, 1826, p. 376.

Hab. India, Bengal.

*sulcatus*, Eschsch., Zool. Atlas., v, 1829, p. 28 : Chaud., *Mon.*, p. 335 : *id.*, (*nee* Laferté), Bull. Mosc., xxx (3), 1857, p. 25. (*sp. dub.*)

Hab. Philippines, Manilla.

Genus **OODES.**

Bonelli, Mem. Acad. Turin, 1809, *tab. syn.* : Lacord., Gen. Col., i, p. 229 ; Mun. Cat., p. 231 : Chaudoir, Bull. Mosc., xxx (3), 1857, p. 25 ; *id.*, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 341 : Horn, Gen. Carab., p. 172.

*Lonchosternus*, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 267 : Lacord., Gen. Col., i, p. 231.

*Stenocrepis*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 45 ; Mun. Cat., p. 234.

*Stenous*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 39 : Mun. Cat., p. 233.

*chalcus*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 30 ; *Mon.*, p. 357.

*nepalensis*, Motsch., Et. Ent., 1858, p. 171 ; Bull. Mosc., xxxvii (4), 1864, p. 353.

*subolivaceus*, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 271, note 4.

Hab. Népal, N. India.

*occelestinus*, Chaudoir, *Mon.*, p. 363.

Hab. Borneo, Sarawak.

*parallelus*, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 271, note 5 : Chaudoir, *Mon.*, p. 347.

Hab. N. India, Dekhan, Malacca.

*piceolus*, Fairmaire, Ann. Soc. Ent. Belg., xxxi, 1887, p. 93.

Hab. China, Fokien.

*piceus*, Nietner, Journ. As. Soc. Ben., xxv, 1856, p. 526 ; *id.* Ann. Mag. N. H., (2s.) xix, 1857, p. 377.

*vilis*, Chaudoir, Bull. Mosc., xxx (3), 1857, p. 32 ; *Mon.*, p. 369.

Hab. Assam, Tranquebar, Ceylon, Siam, China, Macassar.

*siamensis*, Chaudoir, *Mon.*, p. 358.

Hab. Siam, Bangkok.

*subcoriaceus*, Chaudoir, *Mon.*, p. 362.

Hab. Malacca.

*varians*, Chaudoir, *Mon.*, p. 352.

Hab. Bengal.

*virens*, Wiedemann, Zool. Mag., ii (i), 1823, p. 50.

Hab. Bengal.

- Westermanni**, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 271, note 2 : Chaud., Bull. Mosc., xxx (3), 1857, p. 31 ; *Mon.*, p. 368.  
*hispanicus* (*Oodes*), pt. Dejean, Spec., ii, 1826, p. 379.  
 Hab. India, Bengal, Dekhan.

### Genus **SIMOUS.**

- Chaudoir, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 373.  
**aeneus**, Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 270, note 4 : Chaud., *Mon.*, *l.c. supra*, p. 375.  
 Hab. Java.  
**lucidus** (*Oodes*), Chaudoir, Rev. Mag. Zool., (2s.) xxi, 1869, p. 76 ; *Mon.*, p. 376.  
 Hab. Siam, Annam, Cambodia.  
**Mouhotii**, Chaudoir, Rev. Mag. Zool., (2s.) xxi, p. 76 ; *Mon.*, p. 373.  
 Hab. Laos.  
**nigriceps** (*Oodes*), Wiedemann, Germar, Mag. Ent., iv, 1821, p. 114 : Chaudoir, *Mon.*, p. 375.  
*pulcher* (*Oodes*), Dejean, Spec., ii, 1826, p. 375.  
 Hab. India.

### Genus **LACHNOCREPIS.**

- Leconte, Trans. Am. Phil. S., x, 1853, p. 391 : Lacord., Gen. Col., i, p. 394 : Mun. Cat., p. 230 : Chaudoir, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 377.  
**japonicus**, Bates, Trans. Ent. S. Lond., 1873, p. 255 : Chaudoir, *Mon.*, 378.  
 Hab. Yangtse Valley, Japan.

### Genus **HOLCOCOLEUS.**

- Chaudoir, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 521.  
*Oodes*, Laferté, Chaudoir, *olim.*  
**sulcatulus** (*Oodes*), Chaudoir, Bull. Mosc., xxx (3), 1857, p. 38 ; *id.*, *Mon.*, *l.c. supra*, p. 522.  
*latus* (*Oodes*), Laferté, Ann. Soc. Ent. Fr., (2s.) ix, 1851, p. 269, note 2.  
 Hab. Nilgiris.

### Genus **MELANODES.**

- Chaudoir, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 545.  
*Oodes*, Erichson : *Chlaenius*, Laferté : *Possilus*, Reiche : *Feronia*, Klug.  
**pernitidus**, Chaudoir, *Mon.*, *l.c.*, p. 550.  
 Hab. Dekhan, Rangoon.  
**subelongatus**, Chaudoir, *Mon.*, *l.c.*, p. 550.  
 Hab. Dekhan.

### Genus **PATELLUS.**

- Chaudoir, *Monograph*, Ann. Soc. Ent. Fr., (6s.) ii, 1882, p. 551 : Zool. Jahr., Arthr., 1883, p. 212.  
**drimostoides**, Chaudoir, *Mon.*, *l.c. supra*, p. 553.  
 Hab. Burma.  
**ZABRINI** :—Horn, Gen. Carab., p. 173.



Genus **ZABRUS.**

Clairville, Ent. Helv., ii, 1806, p. 80 : Zimmermann, Monograph Carabiden, 1831 :  
 Lacord., Gen. Col., i, p. 330 : Schaum, Revision, Berlin. Ent. Zeits., 1864, p. 174 :  
 Mun. Cat., p. 334 : Horn, Gen. Carab., p. 174.

*Pelor*, Bonelli, Mém. Acad. Turin., Obs. Ent., 1813. tab.

*Pelorosomus*, Motschulsky.

*Polysitus*, Zimmermann, Mon. Carab., 1831, p. 8.

chinensis, Fairmaire, Ann. Soc. Ent. Fr., (6s.) vi, 1886, p. 313.

Hab. Yunnan.

**HARPALINI**, Horn, Gen. Carab., p. 174 : Leconte & Horn, Class. Col., p. 52.

*Anisodactylides*, pt, Lacordaire, Gen. Col., i, p. 268.

*Cratocerides*, pt, Lacordaire, l.c., p. 257.

? *Ditomides*, pt, Lacordaire, l.c., p. 165.

*Harpalides*, Lacordaire, l.c., p. 285.

Horn (l.c. *supra*) divides this tribe into *Dapti*, *Glypti*, *Harpali*, and *Anisodactyli*.

Genus **LIODAPTUS.**

Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 102.

birmanus, Bates, l.c., p. 102.

Hab. Burma, Bhamo, Mandalay.

Genus **BARYSOMUS.**

Dejean, Spec., iv, 1829, p. 56 : Lap. de Casteln., Hist. Nat. Ins., i, p. 94 : Lacord.,  
 Gen. Col., i, p. 290 : Mun. Cat. p. 261 : Bates, Biol. Centr. Amer., Col., i (i), p. 67.

*Oosoma*, Nietner, Journ. As. Soc. Beng., xxvi, 1857, p. 144 ; Ann. Mag.

N. H., (2s.) xx, 1857, p. 368.

Gyllenhalii, Dejean, Spec., iv, 1829, p. 59. : Lap. de Casteln., Hist. Nat. Ins., i,  
 p. 95.

*arenarius* (*Oosoma*), Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 146 ;  
 Ann. Mag. N. H., (2s.) xx, 1857, p. 370.

Hab. India, Ceylon, Colombo (Bates).

semivittatus (*Carabus*), Fabr., Syst. Eleuth., i, 1801, p. 201 : Dejean, Spec., iv, p.  
 60 : Lap. de Casteln., l.c. *supra*, p. 95.

*Gerstaeckeri*, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 147 ; Ann. Mag.  
 N. H., (2s.) xx, 1857, p. 370.

Hab. India, Ceylon.

subcaneus (*Amara*), MacLeay, Annul. Javan., 1825, p. 21.

Hab. Java.

subolivaceus (*Amara*), MacLeay, l.c., p. 21.

Hab. Java.

tricolor (*Amara*), MacLeay, l.c., p. 21.

Hab. Java.

Genus **BRADYBAENUS.**

Dejean, Spec., iv, 1829, p. 160 : Lacord., Gen. Col., i, p. 292 : Mun. Cat., p. 261.

*Calodromus*, Nietner Ann. Mag. N. H., (3s.) ii, 1859, p. 181.

*festivus*, Dejean, Spec., iv, 1829, p. 163 : Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 77.

*exornatus* (*Calodromus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 181.

*ornatus*, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 14, t. 1, f. 8.

Hab. Ceylon, Kandy (*Bates*).

### Genus **HYPSINEPHUS.**

Bates, Proc. Zool. S. Lond., 1878, p. 715.

*ellipticus*, Bates, *l.c.*, p. 716.

Hab. N. W. Himalaya, Pangong Valley [*Ind. Mus.*, type].

### Genus **PANGUS.**

Lecante, Trans. Am. Philad., x, 1853, p. 335 : Lacord., Gen. Col., i, p. 295 : Mun. Cat., p. 267.

*infixus*, Walker, Ann. Mag. N. H., (3s.) ii, 1858, p. 204 (*gen. dub.*).

Hab. Ceylon.

*orientalis* (*Selenophorus*, *Pangus*), Dejean, Spec., iv, 1829, p. 128.

Hab. India.

*quadricollis*, Kollar, Hügel's Kaschm., iv (2), 1844, p. 502.

Hab. Kashmir.

### Genus **HYPOLITHUS.**

Dejean, Spec., iv, 1829, p. 166 : Lacord., Gen. Col., i, p. 295 : Mun. Cat., p. 268.

*javanus*, Gory, Ann. Soc. Ent. Fr., 1833, p. 241.

Hab. Java.

*perlucens*, Bates, Proc. Zool. S. Lond., 1878, p. 715.

Hab. India, Jhelam Valley [*Ind. Mus.*, type].

### Genus **HARPALUS.**

Latreille, Hist. Nat. Ins., viii, 1804, p. 325 : Lacord., Gen. Col., i, p. 295 : Mun. Cat., p. 272 : Horn, Gen. Carab., p. 181.

*Actephilus*, Motschulsky, Bull. Mosc., xxxviii (3), 1864, p. 208.

*Amblystus*, Motschulsky, *l.c.*, p. 209.

*Artabas*, Gozis, Mt. Schw. Ent. Ges., 1883, p. 287.

*Bioderus*, pt, Motschulsky, Käfer Russl., 1850, t. vii.

*Conicus*, Motschulsky, Bull. Mosc., xxxviii (3), 1864, p. 209.

*Erpeinus*, Motschulsky, *l.c.*, p. 208.

*Harpalidium*, Kolbe, Berlin Ent. Zeits., 1883, p. 17.

*Harpalodes*, Motschulsky, *l.c. supra.*, p. 208.

*Holosus*, Motschulsky, Bull. Mosc., xxx (2), 1857, p. 496.

*Ooistus*, Motschulsky, *l.c.*, xxxvii (3), 1864, p. 209.

*Phenginus*, Motschulsky, *l.c.*, p. 209.

*Platus*, Motschulsky, Cat. Carab. Russ., 1850.

*Pseudooophonus*, pt, Motschulsky, Ins. Sib., 1842, p. 196.

[This synonymy requires examination and revision].

- advolans*, Nietner, Jl. As. Soc. Beng., xxv, 1856, p. 226 *id.*, Ann. Mag. N. H., (2s.) xix, 1857, p. 377.  
Hab. Ceylon.
- cephalotes* (*Pseudophonus*), Motschulsky, Et. Ent., 1861, p. 3 ; Bull. Mosc., xxxvii (3), 1864, p. 214.  
*capito*, Morawitz, Bull. Acad. St. Petersburg, v, 1862, p. 359 : Bates, Trans. Ent. S. Lond., 1873, p. 260.  
Hab. Yangtse Valley, Nagasaki, Ussuri.
- chalcantus*, Bates, *l.c. supra*, p. 263.  
Hab. Canton, Yangtse Valley, Korea, Nagasaki.
- \* *coeruleatus*, Bates, Proc. Zool. S. Lond., 1873, p. 714.  
Hab. Yangi Hissar [*Ind. Mus.*, type].
- crates*, Bates, Trans. Ent. S. Lond., 1883, p. 239, note.  
Hab. Hongkong, Yangtse Valley, Korea.
- cyanescens*, Hope, Trans. Ent. S. Lond., iv, 1845, p. 15.  
Hab. China.
- difficilis*, Hope, *l.c.*, p. 15.  
Hab. China.
- griseus*, Panzer, Fauna Germ., 38, 1797 : Dejean, Spec., iv, p. 251 : Schaum, *Naturges*, Ins., i, p. 534.  
*bicolor*, Marshall, Ent. Brit., i, p. 436.  
*ruficornis*, var., Illiger, Käfer Preuss., i, 1798, p. 171 : Morawitz, Beitr. z. Käf. Jesso, i, p. 68.  
var. *Reichei*, Desbrochers, Nat. Ent. Bourb., 1866, p. 42.  
Hab. Europe, E. Siberia, Japan, China, Shanghai, ? Canton.
- indicola*, Bates, Proc. Zool. S. Lond., 1878, p. 714.  
Hab. India, Murree [*Ind. Mus.*, type].
- laevistriatus*, Sturm, Abbild. Oliv. Ent. Käfer, 4, 1803, p. 80 t. 91, f. B.  
Hab. India.
- leucops*, Wiedemann, Zool. Mag., ii (i), 1823, p. 52.  
Hab. Bengal.
- \* *lodes*, Bates, Proc. Zool. S. Lond., 1878, p. 715.  
Hab. ? near Yarkand [*Ind. Mus.*, type].
- \* *masoreides*, Bates, *l.c.*, p. 715.  
Hab. Pamir [*Ind. Mus.*, type].
- melaneus*, Bates, *l.c.*, p. 714.  
Hab. India, Murree. Sind Valley, Leh. [*Ind. Mus.*, type].
- punctilabris*, MacLeay, Annul. Javan., 1825, p. 20.  
Hab. Java.
- punctulatus*, MacLeay, *l.c.*, p. 21.  
Hab. Java.
- relucens*, Bates, Trans. Ent. S. Lond., 1873, p. 264.  
Hab. Fuchau, Nagasaki.

*rugicollis* (*Plutus*), Motschulsky, Et. Ent., 1860, p. 5 : Harold, Abh. Nat. Ver. Bremen, iv, 1875, p. 285 ; Bates, Trans. Ent. S. Lond., 1883, p. 236.

*japonicus*, Morawitz, Bull. Acad. St. Petersb., v, 1862, p. 227 ; Beitr. z. Käfer Faun. Jesso, i, 1863, p. 69 ; Bates, *l.c. supra*, 1873, p. 261.

Hab. Formosa, Fuchau, Shanghai, Yangtse Valley, Japan [*Ind. Mus.*, Murree].

*sinicus*, Hope, Trans. Ent. S. Lond., iv, 1845, p. 14.

Hab. China.

*tinctulus*, Bates, Trans. Ent. S. Lond., 1873, p. 263.

Hab. Canton, Yangtse Valley, Korea, Nagasaki.

*trechoides*, Hope, Trans. Ent. S. Lond., iv, 1845, p. 15.

Hab. China.

*tridens*, Morawitz, Beitr. Käfer. Faun. Jesso., i, 1863, p. 69 : Bates, Trans. Ent. S. Lond., 1883, p. 236.

Hab. Canton, Japan.

\* *turculus*, Bates, Proc. Zool. S. Lond., 1878, p. 714.

Hab. ? near Yarkand [*Ind. Mus.*, type].

### Genus **IRIDESSUS.**

Bates, Trans. Ent. S. Lond., 1883, p. 240.

*relucens*, Bates, *l.c.*, 1873, p. 264 ; 1883, p. 240.

Hab. Fuchau, Nagasaki.

### Genus **GNATHAPHANUS.**

MacLeay, Annul. Javan., 1825, p. 20 : Lacord., Gen. Col., i, p. 299 : Chaudoir, Ann.

Mus. Civ. Gen., xii, 1878, p. 503 : Mun. Cat., p. 286.

*aereus*, Schaufuss, Horae Ent. Ross., xxi, 1887, p. 105.

Hab. China, Macassar.

*subcostatus*, Dejean, Spec., iv, 1829, p. 261 : Lacord., Gen. Col. i. p. 299.

? = *vulneripennis*, MacLeay, *q. v.*

Hab. India [*Ind. Mus.*, Tenasserim].

*vulneripennis*, MacLeay, Annul. Javan., 1825, p. 20 : Hope, Col. Man., ii, t. 2, f. 2,

*a-d* : Erichs., Wieg. Arch. (2), 1840, p. 317.

Hab. India.

### Genus **CARICUS.**

Motsch., Bull. Mosc., xxxix (2), 1886, p. 394.

*testaceipes*, Motsch., *l.c.*, p. 394.

Hab. Ceylon, Colombo.

### Genus **STENOLOPHUS.**

Dejean, Spec., iv, 1829, p. 405 ; Lacord., Gen. Col., i, p. 303 ; Mun. Cat., p. 290 : Horn, Gen. Carab., p. 181.

*Acupalpus*, Latreille, Règne Anim., (2ed.) iv, 1829, p. 391 : Lacord., Gen. Col., 1, p. 302 : Mun. Cat., p. 287.

- Anthracus*, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 207. Balion, Schiöde.
- Egadroma*, Motschulsky, Et. Ent., 1855, p. 43 ; *id.*, *l.c. supra*, p. 201.
- Manicellus*, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 207.
- Megrammus*, Motschulsky, Et. Ent., 1857, p. 26.
- Philodes*, Leconte, Class. Col., 1861, p. 83.
- apicalis* (*Egadroma*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 205.  
Hab. India, Tranquebar.
- biplagiatus*, Bohem., Freg. Eug. Resa. Col., 1858, p. 12.  
Hab. China.
- chalcous*, Bates, Trans. Ent. S. Lond., 1873, p. 270.  
Hab. Yangtse Valley, Japan.
- connotatus*, Bates, *l.c.*, p. 327.  
Hab. Yangtse Valley, Japan.
- yanellus*, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 103.  
Hab. Burma, Rangoon, Mandalay, Bhamo.
- derogatus* (*Acupalpus*), Walker, Ann. Mag. N. H., (2s.) ii, 1858, p. 204 : *ib.*, Bates, (5s.) xvii, 1886, p. 80.  
Hab. Ceylon, Nuwara Eliya (*Bates*).
- gonidius*, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 104.  
Hab. Burma, Bhamo, Teintso, Thagata (Tenasserim).
- guttula* (*Acupalpus*), Dejean, Spec., v, 1831, p. 853.  
Hab. India.
- inernatus* (*Acupalpus*), Bates, Trans. Ent. S. Lond., 1873, p. 268.  
Hab. Yangtse Valley, Japan.
- iridicolor*, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 16.  
Hab. Hongkong.
- lucidus* (*Stenolophus*), Dejean, Spec., iv, 1829, p. 419.  
*proximus*, Falderm., Fauna Ent. Transcauc., iii, 1838, p. 86.  
Hab. India, Caucasus.
- minimus* (*Acupalpus*), Dejean, Spec., iv, 1829, p. 483.  
Hab. India.
- nitens* (*Egadroma*), Motsch., Bull. Mosc., xxxvii (4), 1864, p. 205.  
Hab. Bombay.
- opaculus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 80.  
Hab. Ceylon, Nuwara Eliya.
- polygenus*, Bates, *l.c.*, p. 79.  
Hab. Ceylon, Nuwara Eliya.
- proximus* (*Stenolophus*), Dejean, Spec., iv, 1829, p. 420 ; *id.*, *l.c.*, t. 198, f. 4.  
Hab. S. Russia, Japan, Shanghai.
- quinquepustulatus* (*Badister*), Wiedemann, Zool. Mag., ii (i), 1823, p. 58 :  
(*Stenolophus*) Dejean, Spec., iv, p. 414 : Bates, Trans. Ent. S. Lond., 1873, p. 270 ; Ann. Mag., N. H., (5s.) xvii, 1886, p. 79.



Hab. Japan, China, Yangtse Valley, Cochinchina, Bengal, Ceylon, Colombo, (Bates).

*smaragdulus* (*Carabus*), Fabr., Ent. Syst. Suppl., 1798, p. 60 : (*Stenolophus*) Dejean, Spec., iv, 1829, p. 418 : Lap. de Casteln., Hist. Nat. Ins., i, p. 90 : (*Egadroma*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 203.

*stolidus* (*Harpalus*), Walker, Ann. Mag. N. H., (3s.) ii, 1853, p. 204.

*vulneratus*, Dejean, Spec., v, 1831, p. 852.

Hab. India, Ceylon.

*splendida* (*Egadroma*), Motsch., Bull. Mosc., xxxvii (3), 1864, p. 203.

Hab. Burma.

### Genus **ANOPLOGENIUS.**

Chaudoir, Bull. Mosc., xxv (i), 1852, p. 23 : Lacord., Gen. Col., i, p. 304 : Mun. Cat., 292.

? *Compsolepis*, Nietner.

*Lepithrix*, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 151 : Ann. Mag., (2s.) xx, 1857, *l.c.*, p. 374.

*Lowoncus*, Schmidt Goebel, Faun. Col. Birm., 1846, on wrapper : Motsch., Bull. Mosc., xxxvii (4), 1864, p. 204.

*circumcinctus*, Motsch., Et. Ent., 1857, p. 26 : Bates, Trans. Ent. S. Lond., 1873, p. 269.

Hab. Yangtse Valley, Ningpo, Fuchau, Shanghai, Japan.

*discophorus*, Chaudoir, Bull. Mosc., xxv (i), 1852, p. 90.

Hab. N. India, Simla.

*elevatus* (*Lowoncus*), Schmidt Goebel, Faun. Col. Birm., 1846, t. 3, f. 9.

Hab. Burma.

*foliolosus* (*Lepithrix*), Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 152 ; *id.*, Ann. Mag. N. H., (2s.) xx, 1857, p. 374 : Bates, *l.c.*, (5s.) xvii, 1886, p. 79.

Hab. Ceylon.

*microgonus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 78.

Hab. Ceylon, Colombo, Siam.

*renitens*, Bates, *l.c.*, p. 79.

Hab. Ceylon, Colombo.

*utilans*, Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 103.

Hab. Burma, Katha.

### Genus **BRADYCELLUS.**

Erichson, Käfer Mark. Brand., i, 1837, p. 64 : Lacord., Gen. Col., i, p. 294 : Mun. Cat., p. 263 : Horn, Gen. Carab., p. 294 : Bates, Biol. Centr. Amer., Col., i (i), p. 71.

*Liocellus*, Motschulsky, Bull. Mosc., xxxvii (4), 1864, p. 207.

*laeticolor*, Bates, Trans. Ent. S. Lond., 1873, p. 267.

Hab. Yangtse Valley, Nagasaki.

*marginale* (*Drimostoma*), Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51.

Hab. Ceylon.

*sinicus*, Bates, Trans. Ent. S. Lond., 1873, p. 328.

Hab. Yangtse Valley.

Genus **OXYCENTRUS.**

Chaudoir, Bull. Mosc., xxvii (2), 1854, p. 345 : Mun. Cat., p. 249.

*angustus*, Bates, Trans. Ent. S. Lond., 1876, p. 3, note, ♂.

Hab. Burma, Rangoon.

*borneensis*, Bates, *l.c.*, p. 4, note, ♂.

Hab. Borneo.

*parallelus*, Chaudoir, Bull. Mosc., xxvii (2), 1854, p. 347.

Hab. N. India.

Genus **TACHYCELLUS.**

Morawitz, Bull. Acad. Petr., v, 1863, p. 261 : Mun. Cat., p. 264 : Horn, Gen. Carab., p. 182.

*lamprus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 80.

Hab. Ceylon, Colombo.

Genus **DICHIROTRICHUS.**

Jacq. Duval, Gen. Col. Carab., 1855, p. 35 : Mun. Cat., p. 262.

\* *alticola*, Bates, Proc. Zool. S. Lond., 1878, p. 713.

Hab. Pámir [*Ind. Mus.*, type].

*amplipennis*, Bates, Trans. Ent. S. Lond., 1873, p. 326.

Hab. Shanghai.

Genus **CALATHOMIMUS.**

Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 77.

*consors*, Bates, *l.c.*, p. 78.

Hab. Ceylon, Bogawantalawa.

*maculatus*, Bates, *l.c.*, p. 77.

Hab. Ceylon, Bogawantalawa.

Genus **DIORYCHE.**

MacLeay, Annul. Javan., 1825, p. 21 : Lap. de Casteln., Hist. Nat. Ins., i, p. 123 :

Lacord., Gen. Col., i, p. 309 : Mun. Cat., p. 287.

*Platymetopus*, Dejean, Spec., iv, 1829, p. 68 : Lacord., Gen. Col., i, p. 300 :

Bates, Trans. Ent. S. Lond., 1873, p. 121.

*amoena* (*Platymetopus*), Dejean, Spec., iv, 1829, p. 73.

Hab. Java.

*colombensis*, Nietner, Jl. As. Soc. Beng., xxvi, 1857, p. 151 ; Ann. Mag. N. H., (2s.)

xx, 1857, p. 373 : *ib.*, Bates, (5s.) xvii, 1886, p. 76.

Hab. Ceylon, Colombo.

*corrosa*, Bates, Trans. Ent. S. Lond., 1873, p. 270.

Hab. Yangtse Valley, Fuchau, Japan.

*interpunctata* (*Platymetopus*), Dejean, Spec., iv, 1829, p. 71: Klug, Ins. Madag., p. 133.

Hab. India, Coromandel.

*laticeps* (*Platymetopus*), Dejean, Spec., iv, 1829, p. 76.

Hab. Philippines, Manilla.

*melanaria*, Boheman, Freg. Eug. Resa, Col., 1858, p. 10.

Hab. China.

*quadrinaculata* (*Platymetopus*), Dejean, Spec., iv, 1829, p. 70: Lap. de Casteln., Hist. Nat. Ins., i, p. 92.

Hab. Cochinchina.

*rugosa*, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 150; Ann. Mag. N. H., (2s.) xx, 1857, p. 373.

Hab. Ceylon, Colombo.

*senilis*, Nietner, Journ. As. Soc. Ben., xxvi, 1857, p. 150; Ann. Mag. N. H., (2s.) xx, 1857, p. 372.

Hab. Ceylon, Colombo.

*Thunbergii*, Quensel, Schönh., Syn., i, 1806, p. 188, note: Dejean, Spec., iv, p. 74: Erichson, Wieg. Arch., (2) 1840, p. 367: Bates, Trans. Ent. S. Lond., 1873, p. 271.

Hab. ? Cape of Good Hope, ? India.

*torta*, MacLeay, Annul. Javan., 1825, p. 21: Hope, Col. Man., ii, 1838, t. 2, f. 4 *a-d*: Lap. de Casteln., Hist. Nat. Ins., i, p. 123: Bates, Trans. Ent. S. Lond., 1873, p. 271.

Hab. Java.

### Genus **AMBLYSTOMUS.**

Erichson, Käfer Mark Brand., i, 1837, p. 59: Lacord., Gen. Col., i, p. 301: Mun. Cat., p. 143.

*Hispalis*, Rambur, Faun. Andal., 1838: Motsch., Bull. Mosc., xxxvii (3), 1864, p. 233, *tab. syn.*

*Megaristerus*, Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 427: Mun. Cat., p. 286.

*aenescens*, Motschulsky, Et. Ent., 1858, p. 23: (*Hispalis*) *id.*, Bull. Mosc., xxxvii (3), 1864, p. 233.

Hab. India.

*biguttatus*, Motschulsky, Et. Ent., 1858, p. 25: (*Hispalis*) *id.*, Bull. Mosc., *l.c.*, p. 234.

Hab. India, Tranquebar.

*femoralis*, Motschulsky, Et. Ent., 1858, p. 24: (*Hispalis*) *id.*, Bull. Mosc., *l.c.*, p. 233.

Hab. India.

*flavipes*, Motschulsky, *l.c.*, p. 23: (*Hispalis*) *id.*, Bull. Mosc., *l.c.*, p. 233.

Hab. India.

*fuscescens*, Motschulsky, *l.c.*, p. 23: (*Hispalis*) *id.*, Bull. Mosc., *l.c.*, p. 233.

Hab. India.

*guttatus*, Bates, Trans. Ent. S. Lond., 1873, p. 327.

Hab. China, Fuchau.

- indicus* (*Megaristerus*), Nietner, Ann. Mag. N. H., (3s.) ii, 1858, p. 428.  
Hab. Ceylon, Kitugalle (*Bates*), Madras.
- mandibularis* (*Megaristerus*), Nietner, *l.c.*, p. 428.  
Hab. Ceylon, Colombo.
- pallipes*, Motschulsky, Et. Ent., 1858, p. 24; (*Hispalis*) *id.*, Bull. Mosc., xxxvii (3), 1864, p. 233.  
Hab. India.
- quadriguttatus*, Motschulsky, *l.c.*, p. 24; (*Hispalis*) *id.*, Bull. Mosc., *l.c.*, p. 234.  
Hab. India.
- stenolophoides* (*Megaristerus*), Nietner, *l.c. supra*, p. 428.  
Hab. Ceylon, Colombo.

### Genus **SIOPELUS.**

- Murray, Ann. Mag. N. H., (3s.) iii, 1859, p. 27 : Mun. Cat., p. 287.
- ferreus*, Bates, Ann. Mag. N. H., (5s.) xvii, 1886, p. 76, 211.  
?=*compositus* (*Curtonotus*), Walker, *l.c.*, (3s.) ii, 1858, p. 204.  
Hab. Ceylon, Newara Eliya.

### Genus **ANISODACTYLUS.**

- Dejean, Spec., iv, 1829, p. 132 : Lacord., Gen. Col., i, p. 278 : Mun. Cat., p. 254 :  
Horn, Gen. Carab., p. 184 : Bates, Biol. Centr. Amer., Col., i (i), p. 52.  
*Amphasia*, Newman, Ent. Mag., v, 1838, p. 387 : Lacord., Gen. Col. i, p. 277 : Mun. Cat., p. 254.
- Anisotarsus*, Chaudoir, Bull. Mosc., x, 1837, p. 41 : Lacord., Gen. Col., i, p. 279 : Mun. Cat., p. 257.
- Aplocentrus*, Leconte, Geod. Un. St., 1846, p. 108.
- Dicheirus*, Mannerheim, Bull. Mosc., xvi, 1843, p. 211.
- Eurytrichus*, Leconte, Geod. Col. Un. St., in Ann. Lyc. Nat. Hist. N. York, iv, 1846, and separate, p. 115 : Mun. Cat., p. 257.
- Gynandromorphus*, Dejean, Spec., iv, 1829, p. 186 : Lacord., Gen. Col., i, p. 283 : Mun. Cat., p. 258.
- Gynandrotarsus*, Laferté-Sénéclercq, Ann. Soc. Ent. Fr., (2s.) x, 1852, p. 202 : Lacord., Gen. Col., i, p. 283.
- Spongopus*, Leconte, Geod. Col. Un. St., *l.c. supra*, iv, 1846, p. 277 ; sep. p. 105 : Mun. Cat., p. 258.
- Triplectrus*, Leconte, *l.c.*, p. 108.
- Xestonotus*, Leconte, Trans. Amer. Phil., x, 1853, p. 383 : Mun. Cat., p. 258.
- dispellens*, Walker, Ann. Mag. N. H., (3s.) iii, 1859, p. 51 : Bates, *l.c.*, (5s.) xvii, 1886, p. 75.  
Hab. Siam, Ceylon, Kandy, Hongkong, Fuchau.
- javanus*, Dejean, Spec., iv, 1829, p. 146.  
Hab. Philippines.
- signatus*, Illiger. Käfer Preuss., i, 1798, p. 174 : Panzer, Faun. Germ., 38, 4 ; Dejean<sup>1</sup> Spec., iv, p. 138 : Schaum, Nat. Ins., i, p. 565.  
*rusticus*, Dahl, Col. & Lep., 1823, p. 11.  
Hab. Europe, Siberia, China, Canton (*Putzeys*).

Genus **LAMPROPHONUS.**

Bates, Ann. Mus. Civ. Gen., (2s.) vii, 1889, p. 101.

*lucens*, Bates, *l.c.*, p. 3.

Hab. Burma.

Genus **CHYDAEUS.**

Chaudoir, Bull. Mosc., xxvii (2), 1854, p. 343 : Mun. Cat., p. 254.

*obscurus*, Chaudoir, *l.c. supra*, p. 344.

Hab. N. India.

Genus **HYPHARPAX.**

MacLeay, Annul. Javan., 1825, p. 22 : Lacord., Gen. Col., i, p. 282 : Mun. Cat., p. 253 : Chaudoir, Ann. Mus. Civ. Gen., xii, 1878, p. 496.

*Sagraemerus*, Redtenb., Reise Novara, Zool. ii, Col., 1867, p. 13.

*dentipes* (*Harpalus*), Wiedemann, Zool. Mag., ii (i), 1823, p. 54 : Chaudoir, *l.c. supra*, p. 500:

?=*lateralis* MacLeay, *g.v.*

Hab. Java.

*javanus* (*Sagraemerus*), Redtenb., Reise Novara, Zool., ii, Col., 1867, p. 14, t. 1, f. 7.

Hab. Java.

*lateralis*, MacLeay, Annul. Javan., 1825, p. 22 : Hope, Col. Man., ii, t. 2, f. 3 *a-c* Lap. de Casteln., Hist. Nat. Ins., i, p. 123.

Hab. Java.

*simplicipes*, Chaudoir, Ann. Mus. Civ. Gen., xii, 1878, p. 502.

Hab. Java.

Genus **HYPHAEREON.**

MacLeay, Annul. Javan., 1825, p. 22 : Lacord., Gen. Col., i, p. 284 : Mun. Cat., p. 259.

*reflexus*, MacLeay, *l.c. supra*, p. 22 : Hope, Col. Man., ii, t. 2, f. 5 *a-c*.

Hab. Java.

**PSEUDOMORPHINI**:—Westwood, Rev. Mag. Zool., v, 1853, p. 395 : Lacord., Gen. Col., i, 1854, p. 149 : Horn, Gen. Carab., p. 186 : Leconte & Horn, Class. Col., p. 58.

Genus **ADELOTOPUS.**

Hope, Trans. Ent. S. Lond., i, 1834, p. 11 : Westwood, Rev. Mag. Zool., v, 1853, p. 403 : Lacord., Gen. Col., i, p. 153 : Mun. Cat., p. 157.

*collaris*, Waterhouse, Trans. Ent. S. Lond., 1877, p. 2.

Hab. Siam.

Genus **CRYPTOCEPHALOMORPHA.**

Ritsema, Tijds. v. Ent., xviii, 1875, p. xcii.

Gaverel, Ritsema, *l.c.*, p. xciii ; *ib.*, xxxii, p. lxxxviii.

*marginatus*, Waterhouse, Trans. Ent. S. Lond., 1877, p. 2.

Hab. Java, Batavia.



## ADDITIONS.

## OMOPHRON.—P. 6—

*axillaris*, Chaudoir, Rev. Mag. Zool., (2s.) xx, 1868, p. 59. Hab. Bengal.

*guttatus*, Chaudoir, *l.c.*, p. 62. Hab. Bengal.

*interruptus*, Chaudoir, *l.c.*, p. 62. Hab. Bengal.

*levigatus*, Gestro, Ann. Mus. Civ. Gen. (2s.) vi, 1888, p. 172. Hab. Burma.

*porosus*, Chaudoir, Rev. Mag. Zool., (2s.) xx, 1868, p. 61. Hab. Dekhan.

*saigonensis*, Chaudoir, *l.c.*, p. 57. Hab. Cochinchina, Saigon.

*striaticeps*, Gestro, Ann. Mus. Civ. Gen., (2s.) vi, 1888, p. 173. Hab. Burma.

P. 12—The reference to *Carabus indicus*, is Bull. Soc. Ent. Fr., (6s.) ix, 1889, p. xv.  
Hab. Darjiling.

## MOUHOTIA, p. 17.

*Batesii*, Lewis, Ent. Mon. Mag., xvi, 1879, p. 186: Waterhouse, Aid, t. 125, f. 3.  
Hab. Burma.

## PSEUDOZAENA.—P. 32—

*spissicornis*, Fairmaire, Ann. Soc. Ent. Fr., (6s.) viii, 1888, p. 335. Hab. Laos.

## PRISTONYCHUS.—P. 54—

*alticola*, Fairmaire, Ann. Soc. Ent. Fr., (6s.) ix, 1889, p. xvi.

Hab. Himálaya, Mt. Yeomitong (11,000—12,000 feet) [*Ind. Mus.*]

Add also:—

P. 96—*Broscus Davidianus*, Fairmaire, Ann. Soc. Ent. Belg., xxxii, 1888, p. 7. Hab.  
Yunnan, Hongkong.

P. 97—*Chlaenius hemichlorus*, Fairmaire, *l.c.*, p. 8. Hab. Yunnan.

P. 44—*Stobeus collucens*, Fairmaire, *l.c.*, p. 8. Hab. Yunnan.

P. 44—*Aurisma Delevayii*, Fairmaire, *l.c.*, p. 9. Hab. Yunnan.

P. 44—*Steropanus forticornis*, Fairmaire, *l.c.*, p. 10. Hab. Yunnan.

P. 44—*Omasus stictopleurus*, Fairmaire, *l.c.*, p. 10. Hab. Yunnan.

P. 44—*Steropus lecinoides*, Fairmaire, *l.c.*, p. 10. Hab. Yunnan.

P. 44—*Steropus scuticollis*, Fairmaire, *l.c.*, p. 11. Hab. Yunnan.

P. 44—*Pterostichus haesitatus*, Fairmaire, *l.c.*, p. 11. Hab. Yunnan.

P. 44—*Abax tantillus*, Fairmaire, *l.c.*, p. 12. Hab. Yunnan.

P. 53—*Calathus strigipennis*, Fairmaire, *l.c.*, p. 12. Hab. Yunnan.

P. 53—*Calathus nubilipennis*, Fairmaire, *l.c.*, p. 13. Hab. Yunnan.

P. 54—*Agonum dorsistriatum*, Fairmaire, *l.c.*, p. 13. Hab. Yunnan.

P. 56—*Dyscolus ovipennis*, Fairmaire, *l.c.*, p. 14. Hab. Yunnan.

P. 39—*Patrobus microphthalmus*, Fairmaire, *l.c.*, p. 14. Hab. Yunnan.

P. 50—*Amara orientalis*, Hope Trans. Ent. S. Lond iv, 1845, p. 14. Hab. China.

P. 61—*Perigona Beccarii*, Putzeys = *fimicola*, Wollast.

P. 95—*Brachynus pictus*, add to references after '92', 't. 13, f. 1': and at end [*Ind. Mus., Delhi*].

P. 56—*Colpodes superlita*, Bates, Proc. Zool. S. Lond, 1888, p. 383, Kiukiang.

" " *melittus*, Bates, *l.c.*, 1889, p. 215. Goorais Valley.

" " *eulabes*, Bates, *l.c.*, p. 215. Goorais Valley.

P. 70—*Lebia coelestis*, Bates, *l.c.*, 1888, p. 380. Kiukiang.

" " *chrysomia*, Bates, *l.c.*, p. 382. Kiukiang.

" " *callata*, Bates, *l.c.*, p. 382. Kiukiang.

" " *xanthophana* Bates, *l.c.*, p. 382; *ib.*, 1889, p. 218. Kinkiang, Ichang.

- P. 70—*Lebia prattiana*, Bates, *l.c.*, 1889, p. 218. Ichang.  
 " " *callitrema*, Bates, *l.c.*, p. 219. Ichang.  
 P. 97—*Chlaenius anchomenoides*, Bates, *l.c.*, p. 212. Goorais Valley.  
 P. 111—*Harpalus kashmirensis*, Bates, *l.c.*, p. 213. Goorais Valley.  
 " " *idiotus*, Bates, *l.c.*, p. 213. Goorais Valley.  
 P. 53—*Pristodactyla lacerans*, Bates, *l.c.*, p. 214. Goorais Valley.  
 " " *agonoides*, Bates, *l.c.*, p. 218. Ichang.  
 P. 54—*Pristonychus kashmirensis*, Bates, *l.c.*, p. 214. Goorais Valley.  
 P. 55—*Anchomenus mesostictus*, Bates, *l.c.*, p. 215. Goorais Valley.  
 P. 10—*Carabus Tientai*, Thoms., var. *minor*, Bates, *l.c.*, p. 217. Ichang.  
 " " *ichangensis*, Bates, *l.c.*, p. 217, ♂. Ichang.  
 " " *protenes*, Bates, *l.c.*, p. 217. Ichang.  
 " " *kiukiangensis*, Bates, *l.c.*, 1888, p. 381. Kiukiang.  
 " " *dardiellus*, Bates, *l.c.*, 1889, p. 211. Goorais Valley, Kashmir.  
 " " var. *granulisparsus*, Bates, *l.c.*  
 " " *barysomus*, Bates, *l.c.*, p. 210. Goorais Valley.  
 P. 13—*Carabus (Ceptolabus) angustus*, Bates, Proc. Zool. S. Lond., 1888, p. 387.  
 Kiukiang, Yangtse Valley.  
 " " var. *ignimitella*, Bates, *l.c.*  
 " " *principalis*, Bates, *l.c.*, 1889, p. 216. Ichang, Yangtse Valley.  
 " " *pustulifer*, Lucas, var., Bates, *l.c.*, p. 217. Ichang.  
 " " *longipennis*, Chaudoir, Bates, *l.c.*, p. 217. Ichang.  
 P. 16—*Nebria himalayica*, Bates, *l.c.*, p. 212. Goorais Valley.  
 P. 34—*Bembidion bracculatum*, Bates, *l.c.*, p. 212. Goorais Valley.  
 " " *dardum*, Bates, *l.c.*, p. 212. Goorais Valley.

## CORRECTIONS.

- P. 26—for 'Neitnerii,' read 'Nietnerii.'  
 P. 28—line 5 from top, for 'Gestro,' read 'Bates.'  
 P. 30—line 19 from top, for '*metallicus*,' read '*metallicus*.'  
 P. 34—for '*MORIOIDIUS*,' read '*MORIONIDIUS*.'  
 P. 42—for '*Comottoii*,' read '*Comottii*.'  
 P. 65—for '*dimidiata*,' read '*dimidiata*.'  
 P. 72—line 22 from top, for '*Rhinotheila*,' read '*Rhinocheila*.'

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